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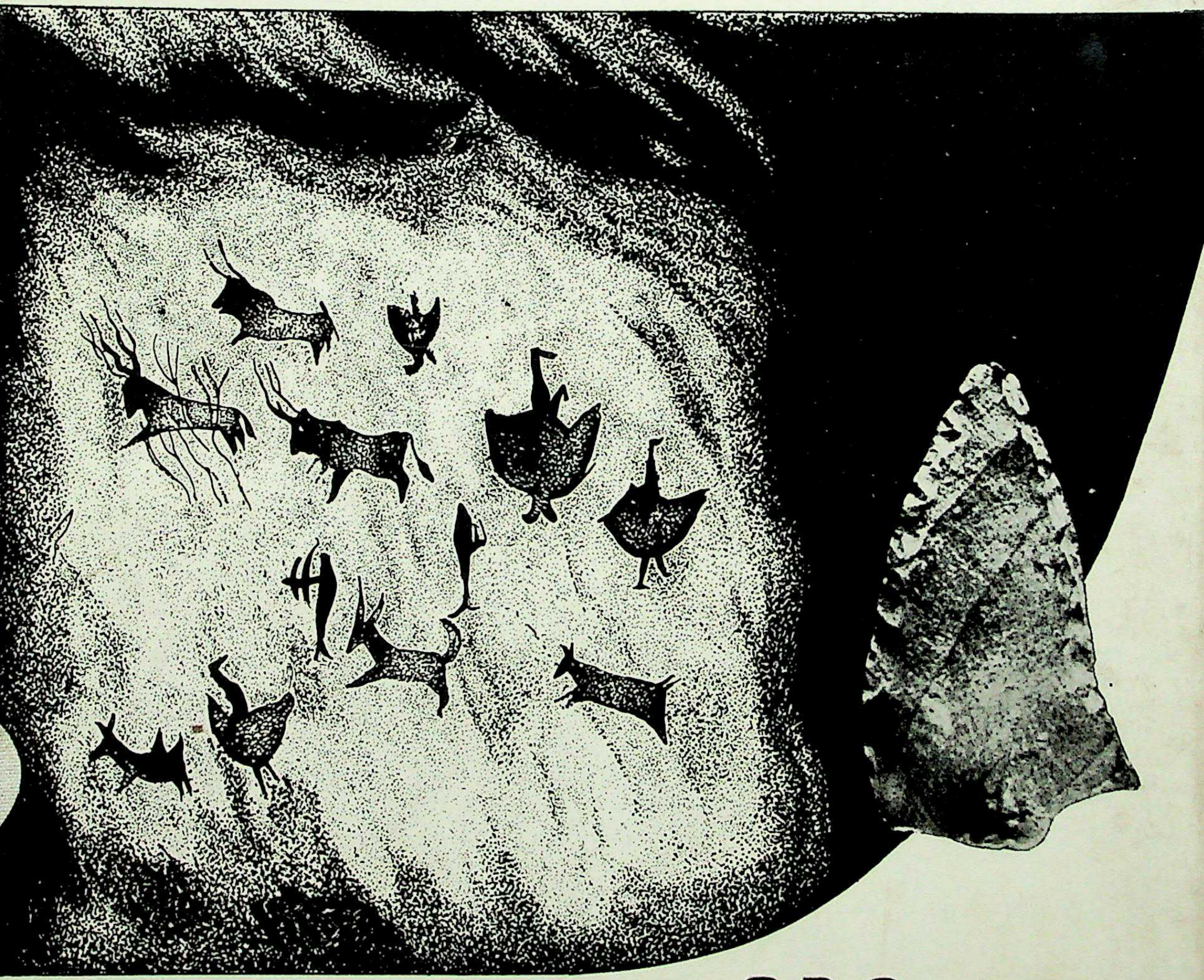
ARCHAEOLOGY OF SOVIET CENTRAL ASIA, AND THE INDIAN BORDERLANDS



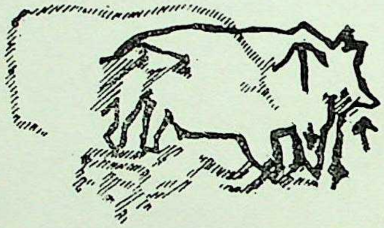
S.P. Gupta

Vol. 1

PREHISTORY

ARCHAEOLOGY OF SOVIET CENTRAL ASIA, AND THE INDIAN BORDERLANDS

Archaeology of
and The Indian



FOREWORD
V. A. RANOV

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Vol. I

S. P. GUPTA

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Contents

Foreword ix-xiii
Acknowledgements xv
Author's Preface xvii-xviii
List of Figures xix-xxii
Chart showing Tentative Correlation xxiii

INTRODUCTION 1-6

1. THE LAND 7-20

General 7-10; The Mountains and Depressions 10-12; The Deserts 13-15; The River Systems 15-20.

2. THE PLEISTOCENE GEOLOGY 21-46

General 21-24; Geomorphological Formation and Palaeolithic Assemblage—Their Correlation—Previous Work : Ranov 1973 as published in *Perspectives in Palaeoanthropology* 24-26; Recent Work 1973-77 : General 26-27; Loessic Formations with Palaeosoils 27-28; The Problem of Pliocene—Pleistocene Boundary 28-29; Stratigraphy of the Cenozoic Deposits : Miocene 29; Pliocene 29; Eopleistocene 30-32; Pleistocene 32-33; Absolute Chronology of Pedocomplexes in South Tadjikistan 33-34; Correlation of Pedocomplexes with European Scheme 34; Correlation of the Pedocomplexes with Fluvial Terraces 34; Glacial Cycles in the Pamirs 34-35; Summary of Pleistocene Geology and Climatology in Southern Tadjikistan 35-37; Pleiocene—Pleistocene studies in Republics other than Tadjikistan 37-38; Loessic Formations; Buried Soils and Lower Palaeolithic Cultures in southern Tadjikistan 38-41; Geological background of the Middle Palaeolithic Cultures of Central Asia 41-44; Geological Background of Late (Upper) Palaeolithic of Central Asia 44-46.

3. THE LOWER PALAEOLITHIC 46-56

General 46-51; Sites and Tools General 51-52; Acheulean Complex 52-53; Chopper-Chopping Complex 53-56.

4. THE MIDDLE PALAEOLITHIC 57-72

General 51-60; Teshik-Tash 60-61; Explorations 61-62; Amir-Temir 93; Levalloisean—Mousterian Group 63-64; Khodja-Kent 64; Obi Rahmat 64; Kairak-Kum 64-66, Caspian Sea sites 66;

East Asiatic Group: General 66-68; Kara-Bura 68-70; Mousterian quarries 71.

5. THE UPPER PALAEOLITHIC 73-86

General 73-75; Explored sites 76-80; Samarkand sites 80-81; Shognou 81-83; Ogzi-Kichik 83-84; Khodja-Gor 85; Chronology 85.

6. THE MESOLITHIC 87-102

General 87; The Eastern Pamir Group : Osh-Khona 97-98; Machai 98-100; The Cave Paintings : Zaraut-Sai 100-102; Shakhta Cave 102.

7. BEYOND CENTRAL ASIA 103-150

General 103-105; Pleistocene Stratigraphy in Northern India : General 106-107; Beas Valley Terraces 107-109; Sirsa Valley Terraces 109-111; Ravi-Chenab Valley Terraces 111-112; Kashmir Valley geological deposits and tools: After Sankalia 112-113; After D.P. Agrawal *et el* 113 : Upper Karewas 113-115; Fossils 116; Archaeology 116-118; India and Soviet Central Asia : First Stage of Development (Soan A—Borigazgan-Karatau I) 118-123; Second Stage of Development (Soan B—Tokali) 123-125; Third Stage of Development (Late Soan-Kara-Bura) 125-129; Final Stage of Development (Evolved Soan—Karasu) 129; Some Recent Discoveries in Soan Region—After Salim 129-133; Correlation between Soan and Tadjikistan : A Fresh Approach; Central Asia and Afghanistan (Ak Kupruk and Hazar Sum) 133-142; Central Asia and Gandhara Region (Pakistan) (Sanghao) 142-147; Microlithis in Post-Mesolithic Contexts in Central Asia and India 147-148; Central Asia and India during the Mesolithic 148-149; Discussion 149-150.

8. THE RESUMÉ 151-157

General 151-153; Lower Palaeolithic 153-154; Middle Palaeolithic 154-156; Upper Palaeolithic 157; Mesolithic 157.

9. THE APPENDICES 159-176

APPENDIX I

Karatau I—A Lower Palaeolithic Sites in the Loesses of Central Asia—by A.A. Lazesenko and V.A. Ranov

APPENDIX II

The Pamirs as Man's Habitat (Abstracts)—by V.A. Ranov and I.F. Sidorovo.

10. POST-SCRIPT 177-181

Recent Discoveries in Soviet Central Asia and India

LIST OF ABBREVIATIONS AND JOURNALS 182

BIBLIOGRAPHY 183-188

INDEX 189-194

LIST OF PLATES 195

PLATES

Foreword

WELL COMPILED and written book by S.P. Gupta is the most extensive and detailed work on the subject in English. The first two volumes are devoted to the pre-historic and protohistoric archaeology of the Soviet Central Asia and the neighbouring countries.

This book is the result of the visit Dr. S.P. Gupta paid to the USSR and his laborious research of the Russian scientific literature. This work could not have been possible without long contacts between Indian scholars and Soviet archaeologists. This is a wonderful example of fruitful international cooperation and it would be better if S.P. Gupta's experience inspires his colleagues who are interested in the later periods of archaeology of Central Asia.

The necessity to publish quite extensively the achievements of Soviet archaeology in the sphere of studies in the ancient past of this country was felt long back. At present more specialists from various countries of the world visit the Central Asia and acquaint themselves with the archaeological sites and monuments, including the prehistoric ones. However, very few of our colleagues sufficiently well know the Russian language and therefore a considerable number of various publications remain inaccessible. (At present only on the palaeolithic of the Central Asia five monographs and over 200 scientific papers have been published). This gap cannot be filled by a few articles published in recent years in European languages.* All the above mentioned things underline the value of the book, written by the well-known Indian scholar; it sufficiently extensively covers the Central Asian archaeological material. The author has very well succeeded in trying to create the full picture of the present idea of the given subject.

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*For example : V.A. Ranov—"Le peuplement pre-historique, de La Haute-Asie (d'apres 1' example de' Asie Centrale Sovitique)", *Anthropologie*, t.76, No. 1-2, 1972 pp. 5-20; "Palaeoliths from Soviet Central Asia", *Perspectives in Palaeoanthropology*, (Calcutta 1974), pp. 175-184; "The Palaeolithic Industries of the Central Asia : A Revision", IX Congress UISPP, Colloque VII, Pretirage, Nice, 1976, pp. 91-129; A.E. Dodonov, V.A. Ranov, "I primi insediamenti umani Enciclopedia della Scientza a della technica—1978, nondasori, Milano, 1978, pp. 232-270.

Here, the great diligence of the author of the book should be stressed who could enlist a wide circle of materials, and who could collect almost exhaustible bibliography of important publications.

Of course, S.P. Gupta's work, as any scientific review made by a scholar of another country, is not free from lack of small mistakes and some of the conceptions of the author seem to me to be disputable. But not these drawbacks, but positive sides may be seen; and, first of all, the large number of material and high scientific value of the book enable us to give highest assessment to the book published.

There is no doubt that the given work will attract attention of many researchers interested in the earliest history of Asia in general and the Central Asia in particular. But it will be of special interest to Indian archaeologists. The Soviet Central Asia and India are the nearest neighbours and cultural ties between them go back to deep ancient days. This is proved by the great resemblance between the Lower Palaeolithic Karatau (south Tajikistan) and Soan (north-west India) cultures which have been elaborated in the corresponding sections of the book. One would not completely rule out at least the marginal impact of great Central Asian Mousterian culture on the still not adequately studied middle palaeolithic culture of India. There are reasons for presuming that some particular diffused wave may have reached right up to Central India in the epoch of Upper Palaeolithic and Mesolithic.

Neolithic strata of Burzahom may belong, according to me, to the ultimate stages of the development of some typical hilly culture, whose most brilliant manifestation can be pointed out in south Tajikistan in the stages of the well known Hissarian or Gissarian culture. This hilly neolithic at various chronological intervals and in various local variants, existed in the hilly regions of Tien-Shan, Hindu-Kush and Himalayas. On the other hand, it is well known how mighty translator of cultural achievements was India in the protohistoric epoch and in the historical times. The findings of the Harappan ceramics at Shoturghai and Harappan seal at Altin-Depe, the influence of Mathura and Gandhara on the art of the Kushan period, Indian prayers in the paintings of Penjikent, Afrasiab and Shakhristan, Buddhist monasteries of Kara-Tepe, Ajina-Tepe and Fayaz-Tepe, are only the facts taken at random testifying to the wide penetration of the Indian cultural achievements in the Central Asia. All these facts call for deep studies on our part.

But we will turn to the Stone Age which constitutes the contents of the first volume of S.P. Gupta's work. Undoubtedly, it deserves praise, for S.P. Gupta does not confine only to the statement of facts connected with the study of this part in the book, but also made a number of comparisons of the Central Asian material and materials of surrounding countries with India (Sections: Central Asia and Afghanistan, Central Asia and Gandhara, Central Asia and India). The author states in this connection a number of interesting ideas—about the advance of Soanian culture from the foothills of the Himalayas to the Central Asia, about the microlithisation of the flint instruments and changes of surrounding palaeoecology, about the prevalence of the autochthonous development of cultures of the Stone Age of the Central Asia over the migratory elements and many others.

In this connection I want to dwell on some general questions connected with the above mentioned themes.

First of all, I will dwell on the division of the Stone Age of the Central Asia and then compare it with India. Diverting, for a moment, from the chronology of Palaeolithic sites, we mark that some of the groups of cultures constituting the archaeological epochs, in both the countries, at individual time-intervals, some considerable resemblances are found, and in other cases—conspicuous divergence. Thus, in the Central Asia to a great extent than in India, for a number of Palaeolithic industries one can apply Western European terminology.*

The time of appearance of man on the territory of the Soviet Central Asia is yet not established. If we do not consider disputed findings, done on the surface of ancient terraces, the earliest findings can be considered as artefacts, as in the 6th Pedocomplex of the loess Karatau near Dushanbe. Their date is fixed by thermoluminiscent method which is 200,000 years. There are reasons to believe that in the near future palaeolithic tools will be found and in deeper and earlier layers, as the general geological situation and our ideas about the palaeoecology of the middle and earlier pleistocene do not contradict such a hypothesis.

Thus, it is difficult to presume that the territory under consideration could be that region where man came into being from the animal world which is, for example, the region of Olduvai Gorge or Rudolf lake of Eastern Africa. For this even south of the Soviet Central Asia is situated extremely far off in the north. But it is fully permissible to think that the roads, along which Hominoides migrated, began in India from Ramapithecus and Sivapithecus Region and went somewhere near. And these roads were not established with the help of paths, but covering wide geographical regions, which slowly, with the hundred of thousands of years, were mastered by the remote forefathers of man in their movement.

One of the regions of such a migration could be India. Literally, therefore, to the study of the widely well-know Shivalik deposits, which has been so well reviewed by D. Pilgrim in Pakistan, and on which so much attention has been paid by a number of specialists of the world, for example by Prof. S.R.K. Chopra and Prof. E. L. Simons. The international symposium on the Neogene-Quaternary border, which will be held in 1979 in Chandigarh, will be an undoubted impetus for the further study of many problems of geology, palaeoecology and stratigraphy of Pleiocene — Quaternary deposits of the north-western India. In any case, now only the very first pages of interesting and mysterious history of origin (or penetration) of man in India and the Central Asia, in the wide sense of this geographical term have been turned over.

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*At present a number of Indian scholars also want the replacement of traditional terms based on the names of implements in Western European terms. This is a complicated question requiring first of all a high level of typological studies without which all the attempts undertaken will be insufficiently founded.

Lower Palaeolithic culture in the Soviet Central Asia, whose beginning, as we say, is connected with Karatau culture, which existed during 200-130 thousand years. It has a sufficiently definite technical and typological look and belongs to the circle of the so-called pebble cultures, characterised by the existence of particular methods of knapping and its secondary processing, and also by the existence of specific tool-types typical for such cultures, made out of pebbles, the Choppers and Chopping tools.

This tradition continues, as it can be judged from the very well studied region of the hilly part of the Soviet Central Asia, *i.e.*, south Tajikistan, during the entire Stone Age to the Neolithic Age, though beginning from the Mousterian time, the pebble element existed in the complicated interaction with the cultures having predominantly flake-blade technique. Parallel with Choppers and Choppings, but in a lesser quantity, the following usual tool types were made : pointed implements, scrapers, points, pins, etc. This group of artefacts was connected with fine raw materials, including flint, whereas the Choppers and Choppings and rough tools were made out of metamorphic rocks, such as quartzite.

About 60-50 thousand years ago a group of sites and stone industry appeared in the Central Asia which can be characterised as the Developed Mousterian. This is the best represented period of the Palaeolithic in the Soviet Central Asia. With the exception of Mousterian-Soanian technical variant (Kara-Bura), all the remaining Mousterian industries show some degree of resemblance with the developed and final Mousterian of Europe and Near East. This line is further developed and is especially brilliantly manifested in the industry of the Upper Palaeolithic site of Shougnou, where blade technology attains the highest level of development.

And at the final stages of the Stone Age of the Soviet Central Asia, one can see the industries at whose base lay various technical traditions, of pebble and of blade, the genesis of these two lines, and the main mechanism of their mutual relation, to a great extent, still remains not clear to us. It is possible that diffusional and migrational elements rested on autochthonous pebble culture, in its various time manifestations.

There is no doubt in tracing the similarity of the first line of development of the stone industries of the Soviet Central Asia — pebble and Soanian culture of North-Western India.

I think that some stages of the pebble cultures of both the areas (especially corresponding to Upper Palaeolithic-Neolithic) have yet not been fully discovered. Some similarity between the Neolithic material of Burzahom and earlier stages of the Hissar (or Gissar) Culture of 6th mill. B.C. (harvesters, knives with polished (sheen) blades, pestles. etc.), lead to some optimism in the direction of Indo-Soviet Central Asian contacts.

Anyhow, we have the right to think that the belt of the high hills of Eurasia, beginning from the Pamirs and Tibet to the south slopes of the Himalayas, was the zone of the cultures which were close in their technical manifestation and which complete the stages of Stone Age. They changed their features as they came down to the plains.

As is known, in the Kazakh steppes, in the ultimate stages of the Lower and in the beginning of Middle palaeolithic, there were places having in their industry handaxes and bifaces very similar to the handaxes and bifaces of the south and central parts of India. One can imagine only two routes along which this type of tools penetrated into the Kazakh steppes : either through Pre-Caspian zone from Iran or through Afghanistan and India.

It is more difficult to compare the Mousterian culture of the Soviet Central Asia and very specific culture of the Midde Palaeolithic of the Indian peninsula. Though lately Indian archaeologists found here more elements, comparable with Mousterian technique in its classical expression, on the whole the two groups in the said regions have yet not been compared.*

The same thing can be said about the Upper Palaeolithic, whose separation and study has just begun. It is supposed that in all the so far known Indian sites only the later stages of development of the Upper Palaeolithic culture are represented. It is yet difficult to say that these industries could directly develop from the Middle Palaeolithic on the spot.

On the other hand, much similarity can be fixed by comparing Mesolithic sites with the geometric microliths in both the regions. Despite the difference in the primary material, and some sizes of items, the full set of instruments and technique of their manufacture seem to be so much indentical that it is difficult not to think about the single centre of origin of these complexes.

Thus, during the entire Stone Age, some similarity in the culture of both the closely located regions — India and the Soviet Central Asia — is stronger in some time intervals and weaker in the others.

S.P. Gupta's book will help to better imagine the peculiarities of cultures of the Stone Age of one of the regions of Asia, *i.e.*, the Soviet Central Asia, and, of course, it will serve as a source of new ideas and elaborations of this direction.

I will not dwell on other merits of the book — they are obvious, and can only wish to the book of S.P. Gupta which is valuable to us, long life in science.

V.A. Ranov
Head of the Department of Archaeology,
Institute of History of the
Academy of Sciences of the
Tajik SSR (USSR)

New Delhi
August 31, 1978

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*It is not ruled out that in future research of sites where Middle Palaeolithic industry will be found in situ, in cultural layers (especially cave sites) general view of the stone instruments and their mutual relation will be different than that obtaining now.

Acknowledgements

A BOOK of this kind has necessarily to depend on the goodwill and kind gesture of many individuals and institutions, particularly for the illustrations which run in hundreds and which cover several countries and various culture-complexes. We gratefully acknowledge their courtesy.

E.J. Brill (Leiden) for our Vol. II, Figures G. 1, M. 3.6, and M. 3.7 based on the illustrations published by them in G. Frumkin's book *Archaeology in Soviet Central Asia*. ISMEO (Rome) for Figures 2.8, 2.13 (b), 2.15, 2.19, 3.25, 3.26, 3.40, 3.41, 5.8 and a few others, although they had already appeaerd in Russian publications. M. Tosi for Figs. 1.1, 2.20, M. 2.1, M. 2.2 M. 2.3, M. 3. 3, M. 3.4, M. 2.5, 5.1, 5.2 and a few others published in *Mesopotamia*, Vol. VIII-IX (1973-74). G.F. Dales for 5.7. H.D. Sankalia for 1.13. J.F. Jarrige for 2.24, 5.5a, 5.5 (b). B. Lyonnet for 5.3a, 5.3b, 5.3c and 5.3d. Lamberg-Karlovsky for 5.3. Mrs. B. Allchin for 7.25 and 26 of Vol. I.

For the various other illustrations, we very humbly acknowledge the courtesy of several Soviet scholars from whose publications the illustrations have been taken. In some examples, where specific points and views of individual authors were to be made their names appear below the figures. In other examples they have been either modified for our needs, such as those from Sapalli Tepe and Dashly Tepe (After A. Askarov and V.I. Sarianidi respectively) or else they have been reproduced completely as in Vol. I Chapter 2 in which several figures on Pleistocene Geology occur (After A.Y. Dodonov *et el*, International Symposium on the Neogene — Quaternary Boundary — Moscow 1977, Guidebook). In this context we must acknowledge the courtesy of V.M. Masson and V.A. Ranov who have been most obliging. Most of the illustrations in Vol. I Chapters from Lower Palaeolithic to Upper palaeolithic and, in Vol. II in Chapter on Bronze Age are from the book *Middle Asia, Epoch Stone and Bronze*, V.M. Masson (Ed.). Some illustrations on Sapalli — Dashly (Late Bronze Age) Culture have been adopted from A. Askarov's book *Sapallia Tepa* and V. I. Sarianidis article "North Afghanistan in the Bronze Period" which appeared in *Afghanistan* Vol. XXIV, 2/3 (1971).

Author's Preface

IT WAS in 1966-67 that Dr. (Mrs.) Grace Morley, the then Director, National Museum, New Delhi, for the first time visualized this project and managed my visit to the Soviet Union and Mongolia under the Cultural Exchange Programme between India and the USSR and between India and the Peoples Republic of Mongolia. I, therefore, owe my deepest debt of gratitude to her. The person who looked to my itinerary and who got the much needed one month's subsequent extension to work with the excavated material housed in the Institute of Archaeology, Leningrad, has been my own friend and classmate, Shri L.L. Mehrotra, Consul General of India at San Francisco, who was then the First Secretary, Embassy of India, Moscow. His wife, Sheela, always played the most cheerful host to me during my repeated visits to Moscow. How can one really be adequately thankful to such good friends.

But admittedly, this work could not be completed without the goodwill and kind gesture and immense cooperation of several Soviet scholars. To all of them my most grateful thanks are due. Of the several scholars who helped me even in procuring photographs and publications are Prof. V.M. Masson, Prof. P.I. Boriskovsky, Prof. S.A. Semenov, Prof. Y. Knorozov, Dr. A.Y. Scshetenko, Dr. Y. Zadneprovsky and Dr. V. A. Ranov. In this context I must also thank my friend Dr. D.P. Agrawal who very kindly lent me several Russian publications he brought from his recent visit to the USSR.

I am not a good translator from Russian to English. For this, my friends Shri B.M. Pande of the Archaeological Survey and Dr. Hem Chandra Pande of the Russian Department, Jawahar Lal Nehru University, have been of greatest help during all these years. The Foreword, a handwritten manuscript, was very kindly translated by Dr. (Mrs.) Naseem Bhatia of the Indian Council of Historical Research. The article published under Appendix I, Vol. I, was, however, translated by Shri Vipin Mathur. To all these friends I am indeed extremely thankful.

To Shri K.S. Ramachandran, my most valued senior colleague who went through the manuscript of Vol. I and offered many helpful suggestions, I am greatly obliged. To my friend Shri K. N. Dikshit also I am equally thankful for lending me the map showing different Grey Ware sites in India. To Dr. G. C.

Mohapatra I have a special word of thanks for not only lending me the photographs of his excavations at Ror but also sending me his publications at a very short notice.

To Mr. Balkishan Km. Pratibha, and Mr. G. Singh of the National Museum Library, and to Mrs. G. Subbarao, Shri C.M. Srivastava, P.D. Jhamb, Miss Nalini, and of course, the grand old man Shri Bhagwat Sahi, and various others of the Central Library, Archaeological Survey of India, I am under great obligation since without their very active support I could never write this book.

For some of the photographs, I have to thank Shri Amreek Singh and Shri E. Shah of the National Museum and Shri Ranjeet Gupta and Shri Laxmi Narain of the Archaeological Survey of India.

But the greatest debt I owe to my friends in the Graphics Deptt. of the Archaeological Survey since they always stood by me in all my quick demands.

To Shri B.B. Datta, I shall always remain indebted for undertaking the entire typing-work connected with this work.

To Dr. V.A. Ranov, I have every reason to be extremly beholden since he not only took me to various archaeological sites in Central Asia and discussed numerous problems connected with my studies but also went through the entire manuscript, made many corrections, sent several photographs, maps and publications. He has also put me under great obligation by agreeing to write the Foreword. To Prof. B.B. Lal, my teacher, and to Dr. V.N. Misra, my friend, I am thankful for taking the manuscript to Dr. Ranov.

Behind the scene, the most laborious jobs are proof-reading and Index-making. The person who took the entire burden of this work has been my former student and now most valued colleague, Dr. (Miss) Shashi Asthana. Will I ever have words enough to thank her adequately?

I will be grossly failing in my duty if I do not express my deepest sense of gratitude to my friend Dr. Sachchidanand Sahai of the Magadh University who not only repeatedly discussed the theme with me but who virtually made me write this book. He even spornored it for the D. Litt. degree which was latter on approved.

National Museum
Janpath, New Delhi

S.P.G.

List of Figures

THE LAND

S.1.1=Chopper-Chopping tools from south Tadjikistan p. 7
S.1.2=The Middle Stone Age site of Kara-Bura, p. 7
S.1.3=Important Rivers and deserts of Soviet Central Asia, p. 8
S.1.3a=Mountain ranges in Eastern Soviet Central Asia, p. 9
1.1=General view of shougnou site, p. 19

THE PLEISTOCENE GEOLOGY

S.2.1=Loess-soil formation near Kayrubak Village, p. 21
S.2.2=Geomorfological reconstruction of South Tadjikistan, p. 21
S.2.3a=Map of Palaeolithic sites, p. 22
S.2.3=Pleistocene Statigraphic Correlation of southern Tadjikistan, p. 23
2.1=Palaeolithic Sites in Southern Tadjikistan, p. 26
2.2=Khonako I, Section, p. 27
2.3=Khonako II, Section, p. 29
2.4=Chashma Nigar, Section, p. 30
2.5=Kuruksay River Valley, Section, p. 31
2.6=Kayruvak, Section, p. 32
2.7=Karatau I, Section, p. 36-37
2.8=Karatau I, Lower Palaeolithic tools, p. 39
2.9=Middle Palaeolithic tools, p. 42

THE LOWER PALAEOLITHIC

S.3.1=A Chopper from south Tadjikistan, p. 47
S.3.2=Lower Palaeolithic tools, p. 47
S.3.3a=Mountain Ranges of Soviet Central Asia, p. 48
S.3.3=Map of Palaeolithic Sites, p. 49

3.1=A Chopper from Karatau I, p. 51
3.2=A Chopping tool from Khonako II, p. 51
3.3=Hand-axes from Krasnovosk, p. 52
3.4=Pebble tools from Southern Kazakhstan, p. 53
3.5=Bi-facial Pebble tools from south Kazakhstan, p. 54
3.6=Lower Palaeolithic tools from Lakhuti I, p. 55
3.7=A Chopper, p. 56

THE MIDDLE PALAEOLITHIC

S.4.1=Mousterian Flake scraper from Ogzi-Kichik, p. 58
S.4.2=Middle Palaeolithic tools from Different sites, p. 57
S.4.3a=Mountain ranges of Central Asia, p. 58
S.4.3=Map of Palaeolithic sites, p. 59
4.1=Tools from Tashik-Tash, p. 60
4.2=Burial of a Neanderthal Boy at Tashik-Tash, Uzbekistan, p. 61
4.3=Mousterian Cores from Khodja-Kent, p. 63
4.4=Mousterian Flakes and Blades from Khodja-Kent, p. 64
4.5=Cores and scrapers from Kara-Kum, p. 65
4.6=Mousterian scrapers and points from Kairak-Kum, p. 66
4.7=Pebble Tools from Karabura, p. 67
4.8=Flake tools from Karabura, p. 68
4.9=Middle Palaeolithic tools from Karabura, p. 68
4.10=Pebble Flakes and Cores from Karabura, p. 69
4.11=Mousterian Cores from Kapchi gai, p. 70

THE UPPER PALAEOLITHIC

S.5.1=End-Cum-side scraper from Shougnou, p. 74
S.5.2=End Scrapers & Blade Core from shougnou and double sided scraper from Samarkand, p. 74
S.5.3a=Map showing important mountain ranges in eastern Soviet Central Asia, p. 74
S.5.3=Map showing important upper Palaeolithic sites, p. 75
5.1=Upper Palaeolithic tools from Samarkand, p. 76
5.2=Blade-flake tools from Samarkand, p. 76
5.3=Upper Palaeolithic tools from Samarkand, p. 77
5.4=Upper Palaeolithic Blade tools from Shougnou, I, p. 78
5.5=Upper Palaeolithic blade tools from Shougnou II, p. 79

5.6=Upper Palaeolithic tools from Shougnou III, p. 80
5.7=Blade Tools from Shougnou, Level 4, p. 81
5.8=Flake Tools from Ogzi-kichik, p. 82
5.9=Flake and Blade Tools from Ogzi-kichik, p. 83
5.10=Blade Tools and Cores from Khodja-gor, p. 84
5.11=Shougnou, Section, p. 85

THE MESOLITHIC

S.6.1=Painting at Zaraut-Sai, p. 87
S.6.2=Mesolithic tools from different sites, p. 87
S.6.3a=Upper Palaeolithic Sites, p. 88
6.5=Mesolithic tools from Tut-Kaul 3rd Level, p. 97
6.6=Mesolithic tools from Chil-Chor-Chashma, p. 98
6.7=Bifacial tools from Osha Khona, p. 99
6.8=Blade tools from Osha Khona, p. 100
6.9=Mesolithic tools from Obi-Kiik, p. 101

BEYOND CENTRAL ASIA

S.7.1=A Pebble Chopper from Karabura, p. 103
S.7.2=Flake Tools from Hazar-Sum, p. 103
S.7.3a=Map of Beas-Banganga Valley, p. 104
S.7.3=Some Stone Age Sites in Central Asia, p. 104
7.1=Kangra Valley Terraces, p. 106
7.2=Himachal Pradesh sites, p. 114
7.3=A Lower Palaeolithic flake from surface collection, Karatau range p. 116
7.4=Tools from Karatau I, p. 117
7.5=Terraces on River Soan, p. 118
7.6=Early Soan tools, p. 119
7.7=Tools from Guler, p. 120
7.8=Tools from Bilaspur, p. 121
7.9=Pebble Tools from Southern Kazakhstan, p. 122
7.10=Palaeolithic tools from Southern Khazakhstan, p. 124
7.11=Flake tools from Guler, p. 125
7.12=Late Soan tools, p. 126
7.13=Tools and cores from Karabura, p. 128
7.14=Late Soan B Sites, p. 130
7.15=Late Soan B, Section, p. 131

7.16=Tools from Soan Valley, p. 132
7.17=Pebble Cores from Giorgievsky-Bugor, p. 134
7.18=Pebble Tools from Kara-bura, p. 135
7.19=Upper Palaeolithic Tools from Samarkand, p. 136
7.20=Upper Palaeolithic Tools from Samarkand, p. 136
7.21=Flake Tools from Hazar-Sum, p. 138
7.22=Flake Tools from Hazar-Sum, p. 139
7.23=Flake Tools from Hazar-Sum, p. 140
7.24=Upper Palaeolithic tools from Ak-Kupruk, p. 141
7.25=Flake Tools from Sanghao-Cave, p. 143
7.26=Flake Tools from Sanghao-Cave, p. 145

THE RESUMÉ

S.8.1=Skull of a Neanderthal Bay from Tashik-Tash, p. 152
S.8.2=Flake Tool and a burial, p. 152
S.8.3a=Stone Age sites in East Punjab, p. 153
8.1=A typical Middle Palaeolithic chopping tools, p. 154
8.2=Mousterian tools from Darra-i-kur, Afghanistan, p. 155
8.3=Flake and Blade tools from the Mesolithic-Neolithic site of Tut-Kaul, p. 156

APPENDIX I

9.1=Lakhuti Schematic section, p. 160
9.2=Reconstruction by A.Y. Dodonov, p. 163
9.3=Lower Palaeolithic tools from Karatau I site, southern Tadjikistan, p. 166
9.4=A Pebbles chopping tools from Khonaka II, p. 171
9.5=Lakhuti and Khonako. Palaeolithic implements, p. 172

POST-SCRIPT

10.1=Sequence of tools at shougnou, p. 178

CHART SHOWING TENTATIVE CORRELATION OF OLD STONE AGE CULTURES OF INDIA, CENTRAL ASIA, PAKISTAN AND AFGHANISTAN

Central Asia	*Pakistan*			*India*			*Afghanistan*
Republics	Soan Valley		Peshawar Valley	Banganga Valley	Sutlaj Valley	Sirsa Valley	Samangan Valley
Ranov	De Terra & Paterson	Paterson and Drummond	Dani	Lal and Mohapatra	Krishnaswami & Gupta	Mohapatra and Sen	Puglisi
Karasu Stage	Late Upper Palaeolithic or Evolved Soan	Final Soan ; Upper Clacton (Punjab)	Sanghao Cave B Assemblage	Banganga T4 Banganga	Bilaspur	Nalagarh	Hazar Sum Assemblage
Kara Bura Stage	Late Soan B Late Soan A	Upper Soan B: Upper Clacton (Punjab) A; Upper Soan A		T3 Assemblage Banganga	T3 Assemblage Bilaspur	Middle Terrace Assemblage Nalagarh	
Tokali Stage Karatau I (Borikazgan)	Early Soan C; Early Soan B; Early Soan A	Middle Soan B Middle Soan A; Lower Soan A		T2 Assemblage Banganga T1 Assemblage	T2 Assemblage	Upper Terrace Assemblage	

Introduction

"IN SPITE of the remarkable progress it has made, particularly since the last war, the archaeology of Central Asia has not yet received the attention it merits from the general public of Western Europe. The most widely available works of reference have little to say about the distant regions with their difficult and outlandish place-names." Thus begins the preface to the book *Central Asia* by Aleksandr Belenitsky published as late as 1968. In a sense, these remarks are equally applicable to Indian general public as also Indian professional archaeologists. The main reason has, of course, been the non-availability of sufficient literature in any Indian language, and even in English.

In the field of prehistoric and protohistoric archaeology more work has been done in Soviet Central Asia than in Chinese Central Asia mainly because of the concerted efforts of the Soviet scholars and the comparative neglect on the part of the Chinese scholars.

In Soviet Centeral Asia, as in India and other countries, the Stone Age people rarely left behind any imposing mound of their cultural refuse and, therefore, Stone Age archaeology remained neglected for a long time. They normally do not figure in any kind of literature, oral or written. But the people of the Neolithic and Metal Ages have left behind recognizable mounds of the ruins of their dwellings which are visible even from a long distance. They, therefore, attracted the attention of interested persons often and on. They are known as *tepe depe* or *kala* corresponding to the *tells* of Mesopotamia. Sometimes terms like *kafir* and *mug* are also used, but only for pre-Muslim burial mounds. *Turt-kul* is another term used in some parts of Tadjikistan. For the burial mounds or barrows of the ancient period the term *kurgan* has also been repeatedly used.

The history of systematic explorations of both the categories of sites, in any case, is comparatively recent. As in any other part of the world, the early attempts were confined to imposing monuments and *tells*, often historical in date. The first attempt to excavate a site in Soviet Central Asia was made by P.I. Lerkh in 1867 at a late settlement of Dhankent, in the lower Syr-Darya, just a year before Samarkand joined the Soviet Union. It may, however, be mentioned that three years before, in 1864, A.O. Gebel had discovered some flint flakes and blades at Alexander's Fort (Mangyshlak) which he had delivered to Petersburg, but that was not the result of any systematic work. In 1875 regular excavations began at Afrasiab, another historical site near Samarkand. Merv, in the Murgab basin of South Turkmenia, now well-known for its antiquities of the early first millennium A.D. was excavated in 1890. The first real prehistoric site subjected to regular excavations was, however, located near the capital of Turkmenia, Ashkhabad. It is called Anau. It was dug first by R. Pumpelly in 1904, followed by the team headed by W. Schmidt in the following year. Both the teams were from the University of Philadelphia, U.S.A. But then, there occurred a gap in these activities since no follow-up action took place for a very long time.

In the post-Revolution period, *i.e.*, after 1917, the archaeology of the Soviet Central Asia witnessed a new fillip it received from the authorities. But, for deeades, attetion was paid only to historical archaeology. Sites like Termez (1926-28 and 1936), Airtam (1932), Kala-i-mug in Zaravshan (1932 and 1934) were explored and excavated, not once but repeatedly. Somehow, prehistory remained in the background. The situation was practically the same as in India where a sound beginning in prehistoric archaeology could be made only as late as 1935, when the Yale-Cambridge Expedition explored the Himalayas as well as the Narmada basin. Of course, there has been one exception in the case of India. In the twenties itself the protohistoric sites of Harappa and Mohenjodaro were excavated. But Anau did not attract the attention of any excavator for full fifty years after its first discovery.

In the year 1937 S.P. Tolstov started his archaeological investigations in Khorezm. At the same time (1936-40) A.N. Bernshtam carried out investigations of large areas in Semirechye (the region of 'seven Rivers', south of Lake Balkhash) and southern Kazakhstan. But, by far the most spectacular discovery of a prehistoric site was made by A.P. Oklandnikov in 1938.The site is Teshik-tash in southern Uzbekistan where the burial of a young boy of the Neanderthal race was discovered along with Mousterian tools. It created a great stir in the Western world since no one could imagine that the Neanderthal man moved as far west as Uzbekistan. H.L. Movius and others wrote long papers on this discovery in the following years. But then the pressure of the Second World War curtailed the archaeological activities in the Soviet Union, as in India and other parts of Asia and Europe. The only notable work undertaken was by V.F. Gaydukevich at the site of the Farhad hydro-electric station (near the town of Begovat, on the left bank of the Syr-Darya) and of the excavation of the Shririn Say Cemetery and the settlement of Munchak Tepe. Immediately after the War, archaeological expeditions in all the Republics were sent under such stalwarts as M.E. Masson, A.Y. Yakubovsky and A.N. Bernshtam, but these expeditions were also concerned mainly with the sites and monuments of the historical period.

In the 1940s and early 1950s, Academics of Science were established in all the Soviet Central Asian Republics and attached to them were the Historical Institutes with archaeological departments. The history of archaeological discoveries in Central Asia now onwards moved mainly around these Institutes although the Institute of Archaeology with branches at Leningrad and Moscow played an equally important role; besides, of course, the Central and State Universities. Thus, in 1949 D.N. Lev of the Uzbek State University published the results of his preliminary researches conducted at the Mousterian site of Aman Kutan, where further work continued till 1956. In the same year, as also in the following year, B.A. Litvinski laid the first trenches at the celebrated protohistoric site of Namazga-Depe, near Ashkhabad. During the same period A.P. Okladnikov excavated a prehistoric cave in the Djebel Hills near Krasnovodsk, located in the western extremity of Turkmenia, not too far from the shores of the Caspian Sea. The site yielded the remains of the Mesolithic and Neolithic cultures, in succession. For the first time such a sequence was unearthed in Central Asia. It created a new enthusiasm amongst the Soviet workers.

The foundation of the combined Archaeological Expedition to South Turkmenia (*T YU TAKE*), which subsequently did a lot of good work, however, was laid as far back as 1946. From 1947 to 1952 the work was carried out by the 9th Brigade under the direction of A. Okladnikov, and, thereafter, by the 14th Brigade under the direction of B.A. Kuftin. In 1952 the direction of this Brigade fell into the hands of V.M. Masson assisted by I.N. Khlopin and V.I. Sarianidi, who have been doing excellent work in south Turkmenia.

These early attempts of the thirties and forties laid the foundations of that great edifice of prehistoric and protohistoric researches which we now admire so much in Soviet Central Asia.

In 1952 B.A. Kuftin, a pioneer worker in Central Asian and Caucasian archaeology, studied the Namazga material and proposed a six-fold classification of the entire deposit, starting with the Neolithic and ending with the Early Iron Age. It is, it may be pointed out, still considered to be the yardstick for the cultural sequence of South Turkmenia although some significant revisions have been suggested by Sarianidi. In the same year, he started excavating two other monumental sites in the same region and almost of the same antiquity—Kara-Depe and Geoksyur. Unfortunately, he died the following year, leaving the field in the hands of a young scholar at that time, but the most brilliant one that the Soviet Union has today—Prof. V.M. Masson of the Institute of Archaeology who also teaches in the University of Leningrad. His close associates at these sites have been I.N. Khlopin, V.I. Sarianidi (of the Moscow branch of the Archaeological Institute) and Yu.A. Shchetenko of the Leningrad branch.

In 1952 itself some significant work was done in another field of prehistory, the rock-paintings. It was published in the same year. The work was done by no less a scholar than A.N. Bernshtam whose reputation as a field-archaeologist at that time was very high. Some ten years later, V.A. Ranov published another series of drawings that existed in the Shakhta Caves of Tadjikistan, but that is a different story. However, attention to rock-engravings were first drawn by N.G. Khludov in 1902 when he wrote about the petroglyphs he noticed at Saimaly-Tash in Central Asia.

From the later half of the fifties, intensive work in both, prehistory and protohistory, started. In prehistory, V.A. Ranov, under the general guidance of Okladnikov, threw himself completely after explorations and excavations in Tadjikistan. In protohistory, V.M. Masson did the same in southern Turkmenia. Their works were, however, augmented by the efforts of several co-workers.

Here it may be stated that like V.D. Krishnaswami in India, A.P. Okladnikov did the pioneering work in the field of prehistoric archaeology in Central Asia, particularly, between the years 1947 and 1953. He explored various regions in Kirgizia, Uzbekistan and Turkmenia and laid the foundation of Stone Age Archaeology in Central Asia of the Soviet Union.

In the meantime Fergana Valley also attracted the attention of scholars. V.I. Sprishevsky and Y.A. Zadneprovsky started explorations and excavations of the protohistoric sites, particularly at Dalverzin and Chust. In southern Fergana, A.P. Okladnikov and M.P. Kasymov conducted explorations of Stone Age sites such as Khodja-Gor. In southern Tadjikistan Ranov excavated (1957-64) the famous site of Kara Bura which yielded pebble tools along with Mousterian tools. In Kirgizia, Okladnikov discovered similar sites of On-Archa and Khodja-Bakirgan.

In 1972 A.A. Lazarenko found for the first time Lower Palaeolithic tools in specific geological context—loess strata of watershed areas of low mountains in southern Tadjikistan. Since 1973 systematic explorations and excavations are being carried out at Karatau I and Lakhauti I sites for a scientific study of the Lower Palaeolothic assemblages by Ranov and a team of geologists. In 1977 an International Symposium was organized to study the geological problems.

At the same time, in Kazakhstan and parts of Uzbekistan, the work started by Tolstov was carried forward by A.V. Vinogradov, Mrs. M.A. Itina and others. Their main concentration was, however, on the Neolithic Culture—particularly the Kelteminar and Uzboi. In southern Kazakhstan, Kh. Alpysbaiev, then a young research scholar, started working on the Palaeolithic sites.

In the sixties, most of these workers had matured and the quality and quantity of the work produced by them started becoming more scientific and less dogmatic. Not only that, serious attempts were made to study the material from Central Asian sites in the perspective of archaeological discoveries made in the neighbouring countries. Thus, in 1964 V.M. Masson published his *Central Asia and the Ancient East* (Russian) which was very well received in the world of archaeologists. In 1955, V.A. Ranov published a book of great importance, *The Stone Age in Tadjikistan* (Russian). Both these works drew the attention of all serious scholars working outside USSR to the new discoveries. They also came to know of the contacts which Central Asia maintained with Iran, Mesopotamia, Afghanistan and India in prehistoric and protohistoric times. In the meantime, some selected works appeared even in English langauge, *The Archaeology in the USSR* by Alexander Mongait, was published in 1959, *Central Asia* by Aleksandr Belenitsky was published by the Magel in *Archaeologia Mundi* series in 1968. In 1970 Gregoire Frumkin published *Archaeology in Central Asia*. In 1972 V.M. Masson and V.I. Sarianidi published *Central Asia* (Turkmenia before the Achaemenids). In 1973 (*Antiquity* XLVII) C.C. Lamberg-Karlovsky and in 1973-74 M. Tosi (*Mesopotamia*, VIII-IX) reviewed at great length this extremely authentic and useful book in English langauge. In 1977 Abstracts of an International Symposium on Neogene—Quaternary Boundary was also published in English. Detailed articles also appeared from time to time in *East and West* but comprehensive work in English has yet to come. In 1968 Masson had published an article in *Antiquity*, "The Urban Revolution in South Turkmenia", which brough to light his excellent work done at Namazga-Depe and Altin-Depe where excavations were being conducted since 1965 along with a young and energetic scholar, Ya.A. Shchetenko. Some notes appeared in *Central Asian Review* XIII, 3, 1964, and also in *COWA Bibliographies* for 1960 1964; as also in the *American Antiquity*, Vol. 27, No. 1 (1961) containing article on microlithic.

A few other publications also appeared in English which created some genuine interest in Central Asian prehistory and protohistory in the English speaking world. In 1964 V.A. Ranov read a paper on the "Relations between the Palaeolithic Cultures of Central Asia and some Oriental Countries" in the VII International Congress of Anthropological and Ethnological Sciences, Moscow. Between 1967 and 1968 S.P. Gupta published five papers in *Soviet Land*, *Anthropologist*, *Puratattva* and *Bharati*. In 1969 he also contributed a paper to the International Conference on Central Asia held at New Delhi, which was published in its proceedings entitled *Central Asia*. Ranov published a paper "Palaeoliths From Soviet Central Asia" in *Perspectives in Palaeoanthropology* (Cal. 1973). In 1976 he gave a report on the same subject to IX International Conf. of Prehistory, Moscow, (Abstracts, Published).

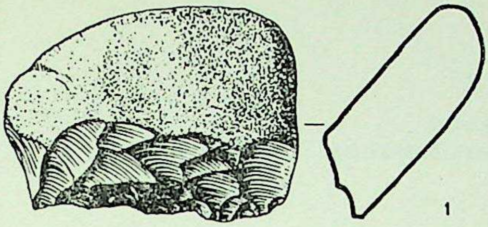
All these attempts to create some genuine interest in the archaeology of Soviet Central Asian Republics amongst the non-Russian scholars, must, however, be taken only as preliminary attempts of scholars since only a few of them had the required depth and breadth. Still, they have been successful in arousing some curiosity, which, as we know, is always required before large-scale publications are attempted.

Coming back to discoveries, the sixties started with the excavations conducted by V.M. Masson at Djeitun-Depe, the type site of the Neolithic Culture of south Turkmenia. Its results were published even in English, in *Antiquity* of 1961. The same year P.N. Kozhemiako published the report on the Bronze Age burials in Kirgizia. In 1962 V.S. Sorokin published the results of his excavations conducted in a cemetery at Tastibutak, a site of the Bronze Age Andronovo Culture, located in western Kazakhstan. In 1963 O.K. Berdyiev published the results of his excavations conducted at another site of the Djeitun neolithic culture, Bami. In 1964 I.N.

Khlopin published the results of his explorations of the protohistoric sites around Geoksyur in south Turkmenia. During the same year Sarianidi published the results of his very important excavations of a Bronze Age site of south Turkmenia—Khapuz-Depe.

Now onwards, for a decade, the work was done both intensively and extensively. D.N. Lev continued to work at the palaeolithic sites in Samarkand (1965). Ranov (1965-67) discovered an open-air site of the Mousterian assemblage in Tossor on the southern shores of the lake Issik-Koul. At Kuhi-Piez, in Tadjikistan, also Ranov discovered Mousterian tools. Kh. K. Nasretdinov worked at the palaeolithic sites of Khodja-kent Cave near Tashkent (1962) and Obi-Rahmat cave, also near Tashkent (1964). A.A. Formozov studied in detail the Rock Paintings of Zaraut-kamar in the gorge of the Zaraut-sai (1966). O.K. Berdyiev studied the neolithic (Djeitun) site of Chagalli-Depe (1966) and G.E. Markov published his article on the Dam-Dam-Cheshma 2 cave, located on the eastern coast of the Caspian Sea. A.V. Vinogradov continued his studies of the neolithic culture of Khorezm, particularly at Kizil-Kum (1968). At Chakmakli-Depe, in south Turkmenia, O.K. Berdyiev excavated the late neoilthic horizon (1968). Sarianidi investigated the ancient mound at Ulug-Depe (1968). Shchetenko published his thought-provoking paper "Southern Turkmenian Parallels of the Harappan Culture" in 1968. A.M. Mandelshtam published his report on the Timber Graves of Turkmenia, repeatedly between 1966 and 1968. K.A. Kachuris also published the results of his excavations at Elken-Depe (1967). At Ulug-Depe, Sarianidi continued to work for some time more (1969). Others were also not lagging behind. Another very important work, *The Statistical Study of the Culture of Obi-Rakhmat Cave* was published by R.Kh. Suleimanov in 1972 at Tashkent. ^{14}C laboratory is functioning in Leningrad and geological and geomorphological work is conducted in the Institutes of Archaeology, both at Moscow and Leningrad. B.A. Litvinski has joined the Institute of Oriental Studies of Moscow where C.M. Bongard-Levin has already been working in the field of historical studies concerning India and Central Asia. In the field of decipherment of the Harappan Script, Prof. Y. Knorozov, Mrs. Volchok and others are actively engaged in the Institute of Ethnography, Leningrad.

There is, thus, a lot of scope for close collaboration between the Soviet and Indian scholars in the field of prehistoric and protohistoric investigations and, it is hoped, this will be exploited to the best interests of both the countries.



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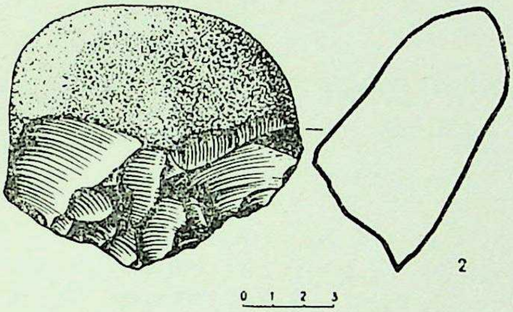

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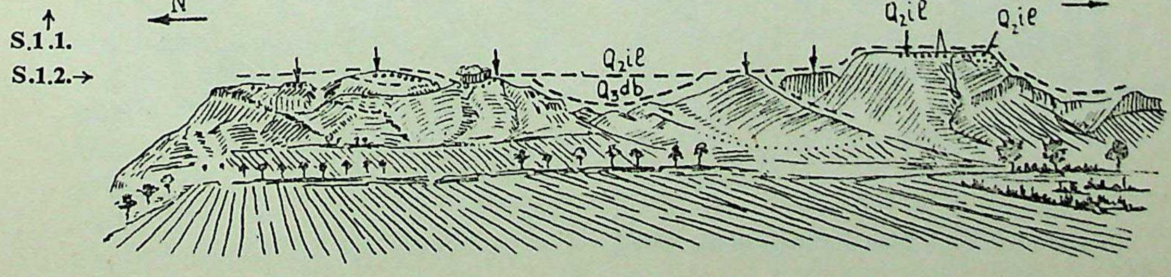

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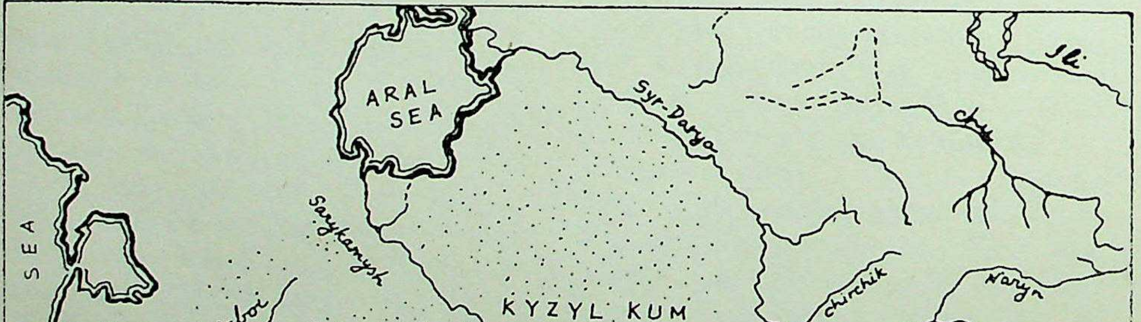
S.1.1=Chopper—chopping tools from south Tadjikistan
S.1.2=The middle stone age site of Kara, Bura, south Tadjikistan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KOPET DAG
Surkhan
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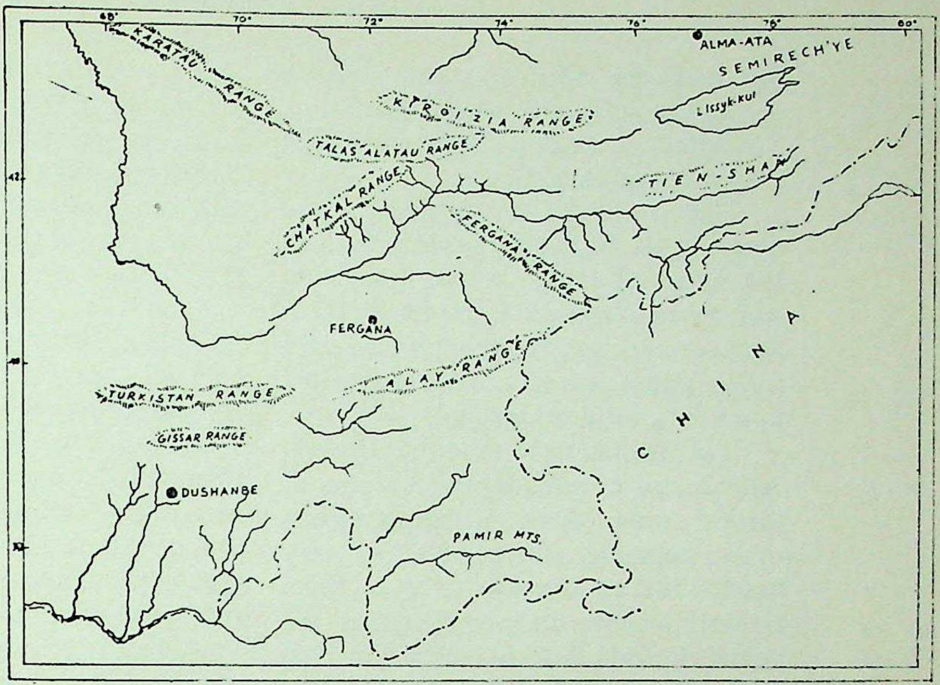
Fig. S.1.3. Map showing important rivers and deserts of Soviet Central Asia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TIEN-SHAN
CHATKAL RANGE
FERGANA RANGE
FERGANA
ALAY RANGE
CHINA
TURKISTAN RANGE
GISSAR RANGE
DUSHANBE
PAMIR MTS.

Fig. S.1.3a Map showing important mountain ranges in eastern Soviet Central Asia

THE geological history of the formation of the present-day Central Asia is only imperfectly known. Hypotheses are more than the solid data. Still, there are some good grounds to believe that at least four major geological events, in chronological sequence, underlie its formation. Thus, in the beginning, some 500 million years ago, a vast sea existed from Western Europe across to China and the northern shores of India which was then a separate land-mass. The theory is based on recent geological studies of the probings initially made for oil. The Soviet geologists in 1973 discovered an extended net-work of coral reefs more than 1·5 km below the surface of the Kara Kum desert.

For over 100 million years sediments brought by rivers formed huge beds of sedimentary rocks in this sea.

Then some 60 million years ago, it is hypothesized, 'the Indian land-mass collided with the Asian land-mass. The impact crumbled the layers of sedimentary rock along the edges of the two continents, creating a line of colossal mountain ranges, among them the Pamirs, the Tien Shan and the Himalayas. The newly formed mountains trapped the sea in north, creating a huge inland basin. As the welding of India to Central Asia continued over the next 25 million years, this basin was wedged up by the edge of the Indian land-mass and was drained to the west—into the present-day Black

Sea and the Mediterranean—leaving Turkestan with only a few large saline "puddles", among them are the Caspian and Aral Sea.'

Then followed the period of the creation of fresh-water rivers, such as the Amu and the Syr which, along with numerous others, now lost or merged, kept on meandering, through their own loads, deposited, cut and redeposited and to be re-cut once again.

It is significant to note that Central Asia is still covered by the category of 'active' zone where earthquakes and other tectonic movements are very much alive: an average of over three tremors occurs daily throughout the year. In 1948 Ashkhabad and in 1966 Tashkent experienced violent earthquakes !

Central Asia never receives rains more than ten inches in a year, in some areas not even that (draughts for a decade have occurred several times). During the long hot summers even this evaporates. The moisture-less air of the day time, therefore, experiences 120° F temperature in July-August while sand and rocks get heated even more, up to 180° F. But as night comes the temperature falls as low as 40° F. In southern parts of Kara Kum desert winters are cold and short, with occasional light fall of snow. But the Aral Sea, *i.e.*, the northern part of the Kara Kum, freezes for four to five months in a year !

Such is the overall climatic condition of the vast deserts of Central Asia. But contrary to it, the northern Kazakhstan falls in the temperate zone with all the features of cold climate. Similarly, the Tien Shan and Alai-Pamir mountainous zone, marking the western part of Central Asia, has contrasting climatic conditions—while in the high peaks glaciers are formed, the lower periglacial areas, with thick loess formations have reasonably cold and hot climates in yearly cycles. In certain areas of the Alai there is desert climate also.

Such is the undulating character of the climatic extremes in Soviet Central Asia. Except for hydrological changes of local consequence, in which some rivers changed their courses while others died out, no evidence of sinificant overall climatic changes in the Holocene have been found so far. The hydrological changes occurred mainly due to tectonic movements and silting, besides other geological factors. Obviously, no uniform or single-pattern culture could develop here; from the earliest times contrasting patterns grew and flourished side by side : flourishing towns existed within 100 km of nomadic settlements.

THE GEOMORPHOLOGICAL AND CLIMATIC BACKGROUND

The Mountains and Depressions

The mountains of Central Asia stretch almost 2000 km. along its borders with Afghanistan and China. The highest range is the Pamirs. The Hissaro (or Gissaro)—Alai mountain ranges lie so close to the Pamirs that these two mountain provinces are often referred to simply as the Pamiro—Alai system. North of the Pamiro—Alai, beyond the vast Fergana Depression, rises the Tien Shan range, with Djungar—Alatau as its biggest northeastern spur. And finally, bordering Siberia are the Tarbagatai and Saur mountain ranges. The mountain ranges and valleys in this part of Central Asia stretch predominantly in a west-east direction. The only exceptions are the fanwise-spread of western spurs of the Hissaro—Alai and Tien Shan mountains, and some lone ridges, like the Fergana Range and Chu-Ili Mountains (Fig. S.1.3a).

It is extremely significant to note that these mountains form an important climatic divide that intercepts the moisture laden masses of air moving towards Central Asia. The tragedy is that after the interception, the escaped clouds when come over the long-summer deserts lose much of their moisture. Thus, while due to effective interception annual precipitation increases with altitude, from 100—200 mm. in the uplands, causing vast glaciers, such as Fedchenko Glacier in the Pamirs and Inylcheck Glacier in the Tien Shan Mountains, the deserts of Central Asia, such as Kara Kum and Kyzyl Kum go absolutely dry.

Since Pamirs have been low and flat anciently, and its present height is due to the constant rise it has been experiencing during the Tertiary and Quaternary periods (the phenomenon is still continuing as it is in the Himalayas), there are many flat lands among the galaxy of high peaks. In areas where anti-cyclonic movement of winds caused the formation of thick deposits of loess, fresh flat lands were created. These places provided a good natural habitat to prehistoric men. Their study, therefore, forms an integral part of cultural enquiry.

The most prominent mountain ranges in the Hissaro—Alai mountain system are the mighty snow-clad Alai Range in the east and the still higher Zaalarsky Range (part of the Pamir) from which it is separated by the upland Alai Valley. Further west lies the so-called "mountain country", or Kukhistan, where the Hissaro—Alai is divided up into parallel chains of mountains, the principal ones being the Turkestan Range, the Zaravshan Range and the Hissar (or Gissar) Range. The Zaravshan River, which runs down a wide valley, provides water for the Samarkand Oasis (Fig. S.1.3).

Among the low mountains in southern Tadjikistan adjoining the Kukhistan, there are large salt plugs—even mountains made up of pure rock-salt, such as Mt. Hoja (or Khoja) Mumin. The most fertile valley of southern Tadjikistan, the Hissar Valley, where lies the capital city of Dushambe, is also located in Kukhistan.

The Fergana Depression, which is the biggest of all the existing intermontane depressions in the Central Asian mountains, is richly endowed with natural resources and has a developed economy. The thalassic deposits of the Sarmatian Sea are covered here by fluvial drift from the neighbouring mountains. In the upraised fringes of the hollow, this drift forms heavily eroded bad-lands made up of gravel, pebbles and loess. The hills that encircle the depression are rich in non-metallic natural resources. The bottom of this oval-shaped depression, whose altitude ranges from 300 to 1000 m above mean seal level is isolated from moist winds by the mountains that encircle it. The humidity level ranges from 100-150 mm a year and only in the foothills does it rise to 300 mm. The centre of the depression comprises mostly dry saline soil and wind-blown sand. The peripheral, inwardly inclined areas along the circumference of the entire depression are cultivated since byages means of artficial irrigation and waters of the western Tien Shan.

The waters of western Tien Shan bring life not only to Fergana oases but also to Tashkent and Chimkent. Similarly, the waters from the northern Tien Shan irrigate the Talass and Chu valleys, the entire string of oases between the cities of Djambul and Frunze and the oases in the foothills of Zailusky Alatau, including the large Alma Ata Oasis. The oases around Lake Balkash get their water supply from the Djungar Alatau.

There are a number of well-known inter-montane depressions such as Lake Chatyrkyal, Lake Sonkyol, Lake Issyk Kul near which flows the river Chu.

The southern boundary of Soviet Central Asia is also mountainous, but the ridges are comparatively very low, and, therefore, dry and desolate. These are Kopet Dag Range which forms part of the vast Turkmeno-Khorasan Mountains covering much of the north-eastern Iran. Through this range passes the Irano—USSR boundary, from the Caspian Sea up to the Oxus. Moderately high, steep sided and flat topped, the ridges of Kopet Dag stretch over a distance of more than 600 km on both sides of the Soviet-Iranian border.

The Kopet Dag is made of Meso-cenozoic strata which got folded up due to Alpine movement and, to that extent, it is one of the youngest fold-mountain systems. It contains almost lifeless mountain deserts and badlands alternating with wide bands of forests of wild-growing fruit trees. Narrow gorges exist side by side with ancient plateaus and with mountain-steppe terrain where local farmers grow bogharic wheat. Some of the slopes are covered with thorny bushes and thin forests of juniper and pistachio trees. The north-eastern edge of the mountains is marked by numerous warm mineral-water springs along the piedmont trough. These are separated from the Kara Kum desert with a comparatively narrow gallery of somewhat hospitable flat land dotted with oases.

On the visible tail-end of the Kopet Dag, only 130 m from the Caspian, towards the north-west, rise the high stark Balkhan ranges. These are called The Great and The Lesser Balkhans since these are divided into two parts by the West Uzboi Canyon. They stand to create the gate-way to Central Asia. Kopet Dag—Balkhan ranges link themselves eventually with the Caucasus via the submarine ridge noticeable from the projection of the barren plateaus of the Krasnovodsk Peninsula far into the Caspian Sea. Adjoining the foothills of the Great Balkhan is the oil-rich area of Nebit Dag. The Balkhan is an extremely barren place, and, therefore, called 'Barsa Kel'mes', by the local people, *i.e.*, a place of no return. Further north are the low ridges of one of the most desolate desert plateau, that of the Ustyurt, meaning again the same, a place of no return. Adjoining are the Mangistau Uplands and Mangyshlak Plateau with similar features.

The northern part of Soviet Central Asia is marked by the vast plateau of Kazkhstan which extended deep into Siberia.

The Deserts

As Soviet Central Asia is known for some of the most remarkable glaciers and thick forests on the Pamirs and Tien Shan mountains, so also it is known for some of the most desolate and dry deserts of the world, where water is perhaps more precious than land and where in the summer the blinding mid-day sun warms the air to a temperature 10°C to 15°C higher than the maximum summer temperature in the central belt of Russia. Winters are short, with frosts and blizzards occurring only in the northern part of the region (Kazkhstan) which has a more pronounced continental climate; in the southern part (the Rebublics) the land is not always covered with snow in the winter. The deserts contain dry prickly shrubs, saksoul and salt enduring grasses.

In addition to purely zonal changes (from semi-deserts to sub-tropical deserts), which one can easily mark on the physical maps, there are marked distinctions in the character and content of the deserts. Stone-deserts, sand-deserts and clay-deserts differ in more ways than the northern deserts from the southern : the flat-lands of the Ustyurt Uplands, the Turgai Uplands and the Kara Kums differ markedly from the folded foundations eroded to a peneplane (Betpak Dala and the hilly country of Kazakhstan) from the "islands" of residual rock of the Kyzyl Kum that were slightly raised in geologically recent times, and from the folded ridges of the low mountain country east of the Caspian Sea.

It is significant to note that the Central Asian plains do not owe their relief entirely to the modern condition of the desert zones. The limestone crest that protects the plateau from erosion in the Ustyurt Uplands was formed at the time when this area was the bottom of the Sarmartian Sea. Similarly, the deserts near the coasts of the Caspian Sea developed on the sedimentary material which it deposited at the time when it invaded and covered the neighbouring territory. It is suspected that at one time the Caspian and the Aral formed one watershed.

But over the vast areas of the deserts, ancient rivers, which brought sand and clay from the mountains, relieved the monotony. Significantly, the ancient, now lost, rivers followed different courses, and, in fact, formed different systems from those of the present. Thus, most of the sands of the Kara Kum Desert consist of the ancient deposits left here by the proto-Amu Darya, while the sands of the Sari Ishikotrau Desert originate from the alluvial material left by the Ili or possibly some other river of the Seven-River Country, which in later times was carried and sifted here by the wind. This, however, does not exclude the possibility of sand being deposited here by ancient seas, as mentioned earlier. The modern relief of the Kara Kums (in the Aral Sea area), the Muyun Kum and certain parts of the Kyzyl Kum deserts, is undoubtedly due to the action of the wind. Finer clay and loess dust are also transported by the same action.

Soviet Central Asia is marked by two major deserts—the Kara Kum and the Kyzul Kum—which occupy the vast lands of the central portion of Central Asia. The Kara Kum (Black

Sand) covers the Amu (Oxus) Darya basin and spreads from the Kopet Dag mountains up to the deltaic region of the Amu. The area is bounded by the Caspian Sea on the west and Amu Darya in the east. It covers about 3,00,000 sq. km. of area. The northern part is the barren Zaunguzk Plateau, while the south-eastern part, along the borders of Afghanistan, is the barren Karabil plateau. The Kyzyl Kum (Red Sand), on the other hand, covers the Syr Darya basin and spreads from the Oxus drainage line up to southern Kazakhstan, occupying about 1,20,000 sq. km. The two put together is known as Turan Depression which starts from the Caspian Sea and reaches the base of the Tien Shan. The depression is marked with alluvial deposits of the ancient period as well as erosion.

In the south of the Kara Kum and in the south-east of the Kyzyl Kum, at an altitude of 300-400 m above sea level, there are inclined plains with well irrigated piedmont oases, including the Tashkent and Bukhara oases and the Akhal Tekke oasis where the city of Ahskhabad is located. Closer to the Aral Sea, clay-covered plains (*takyrs*) are more frequent, where the Amu Darya and the Syr Darya once crossed the desert. The heat and aridity of this depression (in the south 50°C in the shade) arise from long periods of penetration of continental tropical air currents. In the spring time tropical air currents also come from the south, but throughout the summer months, hot air originates locally.

There is a semi-desertic landscape in the Balkhash-Alakol Depression located on the elevated plains of the eastern areas of Central Asia. Here the Lake Balkhash plains, the Betpak Dala Desert and the Muyun Kuml Desert—lie at altitudes of between 300 and 700 m. above mean sea level. Although the summer heat is not appreciably reduced, the winters certainly are more severe than what they are in Turan Depression. The chain of lakes in the Balkhash-Alakol Depression is of great significance for prehistorians since these are the remnants of a larger reservoir which existed here in the Quaternary period. Lake Balkhash, which is 600 km long and about 6 metres deep, lies 339 m above mean sea level; the Uzun-Aral strait divides the lake into two parts, the western part having fresh water and the eastern part brackish water.

THE CLIMATIC OSCILLATION IN PIEDMONT PLAINS AND DESERTS, AND THE ROLE OF OASES

The piedmont plains of Soviet Central Asia did not experience any glaciation, but they did experience several periods of alternating humidity. During the more humid periods, canyons, which are now dry, such as Uzboi near the Caspian Sea, were scoured out by powerful streams, and fluvial sand was accumulated. The shifts of centres of atmoshpheric activity over the ages, with the accompanying shifts of climatic fronts and cyclonic paths led to alternating humid and dry periods which had a particularly noticeable effect on what is now the dry terrain of Central Asia. When cyclones passed north of Central Asia, the rains they brought fed the drainage system of the Caspian basin, raising the level of this sea. At the same time the Central Asian plains dried up, rich grasslands gradually turned into deserts while the level of the Aral Sea and Lake Balkhash dropped. With the cyclonic winds shifting to the south, the deserts receded, giving way to blooming steppelands. The level of the Caspian Sea dropped, while the Aral Sea and Lake Balkhash, swollen by mountain streams, rose and expanded.

The hydrological studies clearly show that the great instability of natural landscape on the plains of Central Asia is the direct result of the scarcity of water resources. Even the slightest drop below the critical limit touches off drastic changes in weather and climate of the region.

From our point, it is extremely significant to note that the hydrological changes and changes in the course of the rivers directly affected the course of culture in this region. On the one hand, it prompted people to make collective efforts to dig canals to tide over the difficulty and, on the other, when it did not work effectively for a long period, it lead people to change their habitations from place to place. A kind of nomadism, which completely prohibits the growth of urbanism, was the direct result of the hydrological changes. From the prehistoric times till the last century, the fortunes of many people and empires fluctuated with the fluctuation in the hydrological pattern of Soviet Central Asia. There was, however, one redeeming factor—the Oases.

Oases are found not only at the foot of mountains and along rivers but also around the few wells that are found in these parts. Now, there are more than 20,000 such wells from which the nomadic people could draw water, albeit very much limited. Bigger oases are found along the northern ends of the Kopet Dag mountains, the deltas of the Murgab and Tedjen, Amu, Syr and Zaravshan rivers, and in the Fergana Valley. There the human habitations continued intermittently for ages.

The River Systems

There are two major rivers in Soviet Central Asia : the Syr Darya (also Taxartes) and the Amu Darya (also Arax and Oxus). Both start in the Alai-Pamirs and end up in the Aral Sea. For their greater lengths they traverse the Kara Kum—Kyzyl Kum deserts. To be exact, the Syr rises from the Alai and travels through the Kyzyl Kum while the Amu rises from the Pamir-Hindu-kush and travels through the Kara Kum (Fig. S.1.3).

The Syr, with its tributary, the Naryn, is more than 3000 km long, and from the point of confluence of the Naryn and Kara Darya rivers, the Syr Darya flows 2206 km before it reaches the Aral Sea. Presently, it supplies water to many canals and power stations in the Fergana Valley—the Farkhad (Farhad) Reservoir feeds both the Dalvarz canal and the Hungry Desert Canal. Below the Hungry Desert, the river flows down a very young valley, devoid of ancient terraces. It is probable that in the first half of the Quaternary period the old course of the Syr (proto-Syr Darya) ran westward, towards the lower reaches of the Zaravshan river and it was only in later periods, with the recent elevation in the zone of the Nuratau-Kyzl Kum, that this river turned in a north-westerly direction. After cutting through the loess deposits at the foot of the Karatau, the Syr Darya flows into a plain and branches out over swampy floodlands allowing water into hundreds of irrigation installations of the Kyzyl-Orda Oasis. In its lower reaches, the Syr Darya is navigable although in the deltaic region it freezes from December through March. It also brings a lot of silt with it, much of which settles down midway and changes the channels very often.

It is significant to note that the low mountain-ridges of the Kyzyl Kum desert, which occupy the land between the Syr and the Amu darayas, contain Palaeozoic metamorphic material and granite intrusions which is why the heart of Kyzyl Kum contains graphite, asbestos, talc, turquoise and even gold (Muruntau). Turquoise was one of the main export items from this region for West Asia during the protohistoric period. Other semi-precious stones were also mined and exported for long distances, such as talc.

The Amu Darya is, however, considered to be more powerful than the Syr Darya. From the source, the Vakhdjir, it is a little over 2,500 km long, and from the confluence of its two main tributaries, the Pyandj and the Vakhsh, it is about 1400 km. Both the Vakhdjir, and Vakhan Darya, which is the continuation of the Vakhdjir, take their rise in Afghanistan. The Pyandj originates at the confluence of the Vakhan Darya and the Pamir River. Over its entire length, it forms the natural border between the Soviet Union and Afghanistan. In its upper reaches, the Amu also flows along the Soviet-Afghan border over a distance of 250 km. At this point it cuts through conglomerate and the loess layers of the Afghano-Tadjik Depression.

The village Kelif marks the beginning of the young section of the Amu Darya Valley, for in geologically recent times the river flowed westward down the Kelif-Uzboi, in a southerly direction into the southern Kara Kums and, then into the piedmont trough of the Kopet Dag mountains. During a more humid later period, the Amu Darya changed its course, cutting a new channel to the north-west, in the direction of the Aral Sea, thus vacating the Kelif-Uzboi which was later occupied by the Badni Bala (Balkh) river. Until that time this had been the left tributory of the Amu Darya; presently it flows in Afghanistan and even in the Twentieth century there have been cases when it has broken out of its channel and spilled out across the border.

In the middle reaches, particularly in summer when the snow and ice melt in the mountains, the unpredictable and erratic behaviour of the Amu and its powerful destructive force are very much in evidence. From Faizabad Kala, the river is generally navigable, but frequent cases of silting and divagation of the entire channel impede navigation.

The great river has been erratic even in its lower reaches. Even when it flowed in a north-westerly direction, the river did not always debouch into the Aral, for there were periods when it turned in the direction of the Sarykamysh Depression. South-west of the eastern coast of the Caspian, almost at the south-eastern end, there are two river-systems which form the transitional zone between Iran and Turkmenistan : one is Atrek-Sumber and the other is Gorgan. Both the Atrek and the Sumber take their rise in the

Iranian portion of the Kopet Dag mountains. The Sumber flows for larger portions in Turkmenia while Atrek flows for a long distance in Iran. However, their confluence is located in Turkmenia and the combined river, known after the major channel, the Artek channel, ends up in the Caspian within Turkmenia. Gorgan, on the hand, is now-a-days, a fully Iranian river. The Atrek-Gorgan Zone, which forms the transitional area between Iran and Turkmenia, has yielded the remains of several protohistoric settlements. These sites, as will be shown later, are extremely crucial for our study of the birth, growth and extra-territorial contacs of the Central Asian culture-complexes.

North of Artek, around Kizil Arvat, there are now a few dried up rivers which only occasionally get water supply.

However, there are two major rivers in Turkmenistan which played the main role both during the protohistoric period and historical period. The western one is Tedjen while the eastern one is Murgab. And both of these rivers take their rise in the Paropamisus Mountains of the Khorasan Plateau in the north-western end of Afghanistan. When they enter Turkmenia, they run roughly parallel to each other and end up in the deserts of Kara Kum. The deltas of both of these have been quite fertile due to the load of silt that they brought here. However, silting also led to the frequent change in the Aral Sea, which at times flowed into the Caspian Sea.

It is also interesting to note that the Amu has built two deltas, one above the other. They are connected by a narrow gorge near the stony promontory of Takhia Tash where the river cuts through the craggy low mountains of Sultan Uizdag. The upper delta was formed in the period when the Amu Darya debouched into the Sarykamysh Depression. On this delta rose the Khorezm Oasis which became the most favourite place for culture-growth and culture change in ancient times. The oasis has been irrigated by a huge net-work of artificial canals. Turtkul is one of the most prominent towns of the Oasis.

Besides these two major rivers, which cut across many geographical areas and several Republics, there are a number of important smaller rivers whose basins witnessed the drama of rise and fall of many cultures. Some of these are as follows.

In Turkmenistan, there is the West Uzboi which may have once one of the branches, or even the main channel, of the Amu. At present it is a lost river in the western Kara Kum deserts. Its course can be seen through the Balkhan mountains up to the Krasnovodsk peninsula, located on the Caspian. In the Balkhan region there are prehistoric caves and in the Krasnovodsk area there are palaeolithic stations. Areas lower down the deltaic streams, like Khorezm, also necessitated the digging up of a series of canals for proper irrigation. (Fig. S.1.3)

In Tadjikistan there are several rivers, but mainly mountainous. Some of them are located at great heights, particularly those in the eastern half of the Republic, such as the combined streams of Aksu-Murgab which empties itself in Lake Sarez, the Gunt which joins the Amu System; the Plyandz also ends up similarly. So is true of the Pamir rivers. However, the rivers.

which have really been important culturally are those flowing in the western half of Tadjikistan. All of them discharge their waters in the Amu System. Thus from the west to the east they are Kafirnigan, Vaksh and Kyzylsu. Each one of these has its own small tributaries. Those important for us are Yavanshu of the Vaksh and Obimazar and Yakshu of the Kyzylsu. In their basins we have the remains of cultures of all the major periods, starting from the Lower Palaeolithic. They take their rise at various points in the Hisar (Gissar) Mountains and their extensions are located in the Alai ranges.

In the western-central zone of Tadjikistan there is the Zeravshan river, arising in the Alai, running in the east-west direction across Uzbekistan and ending up near Chardzou, on the Amu. Some of the famous historical sites, like Pendijikent, Samarkand and Bukhara are located on it.

Within the present boundaries of Uzbekistan, but almost parallel to Kafirnigan, there are two important rivers which also discharge their waters in the Amu Darya. There are, from west to east, the Shirabad river and the Surkhan Darya. The well-known historical site of Termez is located on the confluence of the Surkhan and the Amu.

It is of some importance to our understanding of the physiography and climatology of southern Central Asia that a very long canal, the Karakum Canal, has recently been built to take water from the Am, a little down stream of the town of Kirki, through the deserts, towards the west, and across the deltas of the Murgab and Tedjen, and along the northern foothills of the Kopet Dag, touching Ashkhabad, the capital town of Turkmenia. For the resettlement of the growing population and bringing back the old agricultural area to cultivation this has been considered essential. Artificial irrigation has always been a necessity in this dry desertic region, and its history goes back to the protohistoric period.

In the north-eastern part of Uzbekistan, around Tashkent, there is the Chatkal Mountain and Chirchik river, with its tributary, the Angren. Their water falls in the Syr Darya.

In Kirgizia, there are a number of river systems arising from a number of ranges, north of the Alai mountains. The whole republic is mountainous with lakes like Issyk-kul, Sonkul and Chatyrkel. The major mountain ranges are in the south, the Turkestan and the Alai; in the central part, the Fergana and Chatkal; the north-east, the Karatau Talas-Alatau; in the north, the Girgiz and in the east, the Tien-Shan. The major river is Naryan, a tributary of the Kara Darya, which ultimately ends up in the Syr Darya.

In Khazakhstan, the important area for us is the southern part, around the capital city of Alma Ata, the Balkhash lake, the basins of the rivers Chu and Sarsu, plus the Syr Darya delta and basin. The river Illi, arising in eht Tien-Shan in Kirgizia, travels a long way and discharges its water in the Lake Balkhash. The Chu and Sarsu pass along some of the most inhospitable regions of Central Asia, such as the Muyumkun deserts. The northern part of Kazakhstan goes more with the Siberian plateau than with Central Asia.

The geomorphological features of Soviet Central Asia, as seen in its

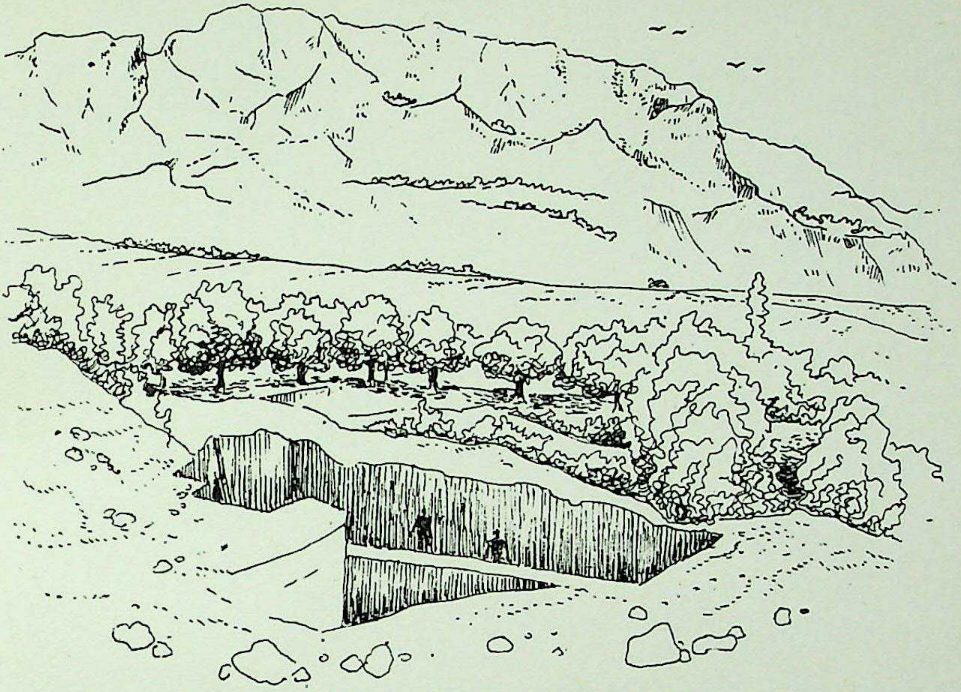
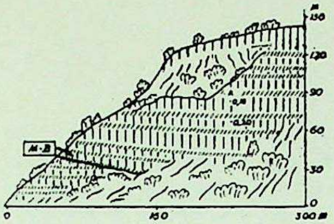


Fig. 1.1. The environmented background of Shougnou, an upper Palaeolithic site in south Tadjikistan. Mark the excavated sections in the foreground.

mountains, deserts and rivers with climatic and hydrological background detailed above, will, it is hoped, go a long way in our understanding the past cultural patterns of this region in the proper environmental perspective.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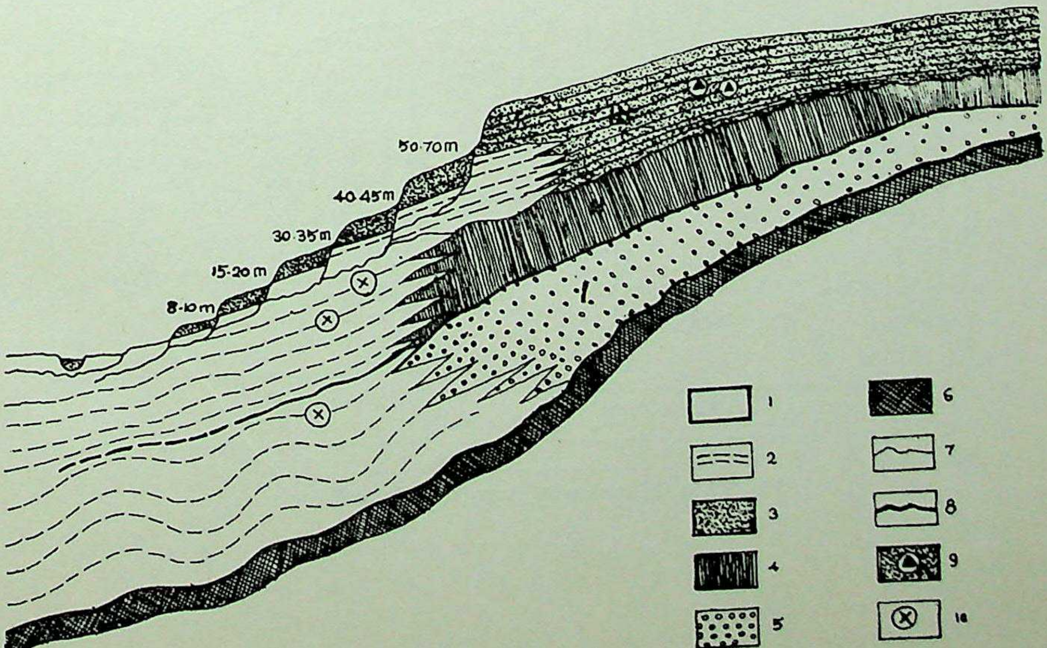
THE PLEISTOCENE GEOLOGY

S.2.1 ↑

S.2.2 →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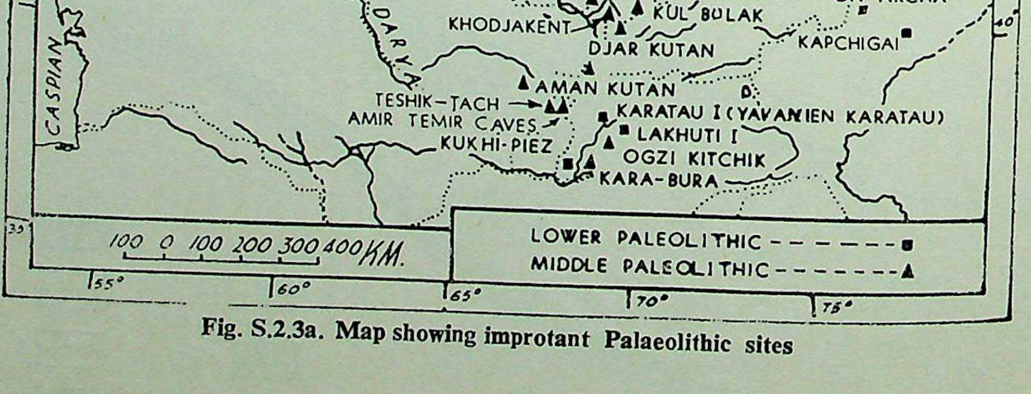
4961

S.2.1=Outcrop of loess-soil fromation, 1.5 km south of the Kayrubak kishlak village. The figures in the middle part of the outcrop show in the million years according to TL date

S.2.2=Reconstraction by A.Y. Dodonov. Geological and geomorphological reconstruction of the sequence of upper Pliocene and Quarternary formations in southern Tadjikistan. 1 and Early stages; 3 Pleistocene loess; 4 eopleistocene loeses; 5 upper Pliocene deposit; 6 pre-Pliocene deposit; 7 erosion; 8 geological unconformity; 9 tools of the Karatau; 10 Different Pedocomplexes

I Kuruksay deposit
II Kayurbak deposit
III Kyzylsu deposit


55°
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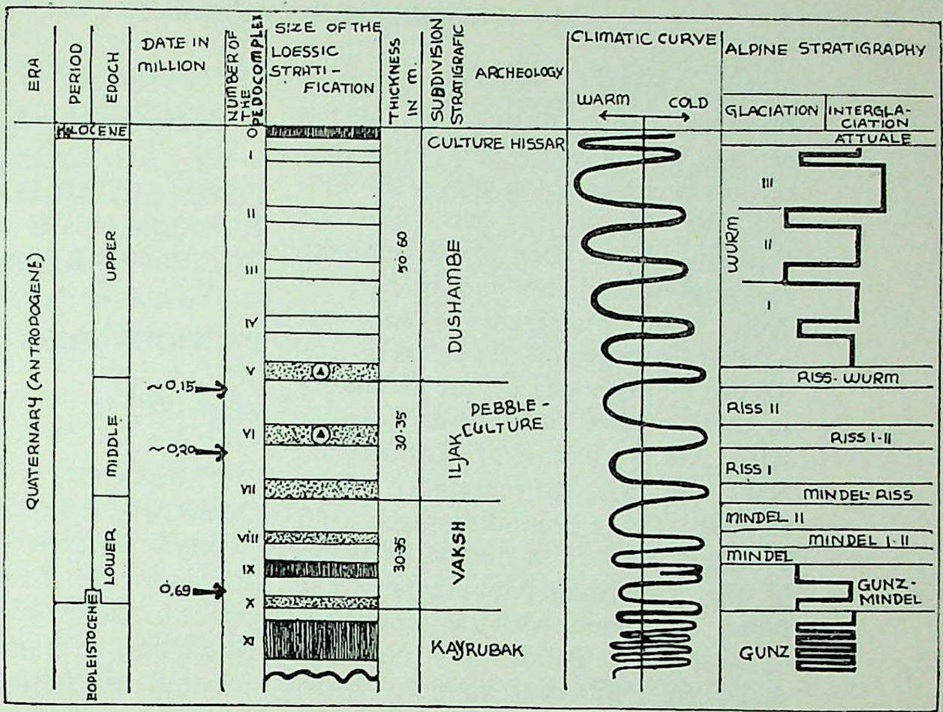
ARAL SEA
SYR DARYA
AMU DARYA
CASPIAN SEA
KARATAU (KAZAKHSTAN)
GEORGIVESKY BUGOR
KAIRAK KUM
BECH-BARMAK
TOSSOR
OBI-RAKHMAT
ON-ARCHA
KUL BULAK
KHODJAKENT
KAPCHIGAI
DJAR KUTAN
AMAN KUTAN
TESHIK-TACH
AMIR TEMIR CAVES
KARATAU I (YAVANIEN KARATAU)
LAKHUTI I
KUKHI-PIEZ
OGZI KITCHIK
KARA-BURA
100 0 100 200 300 400 KM.
LOWER PALEOLITHIC ------- ■
MIDDLE PALEOLITHIC ------- ▲

Fig. S.2.3a. Map showing improtant Palaeolithic sites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THICKNESS IN m.
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ARCHEOLOGY
CLIMATIC CURVE
WARM
COLD
ALPINE STRATIGRAPHY
GLACIATION
INTERGLA-CIATION
HOLOCENE
QUATERNARY (ANTROPOGENE)
UPPER
MIDDLE
LOWER
EOPLEISTOCENE
~0,15
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0,69
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I
II
III
IV
V
VI
VII
VIII
IX
X
XI
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CULTURE HISSAR
DUSHAMBE
ILJAK
PEBBLE-CULTURE
VAKSH
KAYRUBAK
ATTUALE
WURM
III
II
I
RISS-WURM
RISS II
RISS I-II
RISS I
MINDEL-RISS
MINDEL II
MINDEL I-II
MINDEL
GUNZ-MINDEL
GUNZ

Fig. S.2.3. Pleistocene geological stratigraphic correlation—southern Tadjikistan

AS ELSEWHERE, the study of Palaeolithic cultures in the Soviet Central Asia is closely connected with the geological and palaeo-climatological study of that region. In recent years certain epoch-making discoveries have been made in this direction but, unfortunately, they are still extremely limited in area covered (southern Tadjikistan) and therefor, do not give us enough data on the Pleistocene Era encompassing the whole of Central Asia.

However, the earlier studies show that by the end of the Tertiary period, Soviet Central Asia had already developed the dry continental climate and mixed desert-steppe ecology of a kind that prevails today. Obviously, it is doubtful if under these environmental conditions early primates and hominide lived here. The only possible solution that we can imagine of lies in the explorations of the peri-glacial regions of the Pamirs which, in a sense, forms an extension of the Himalayas. Here the enviroment must have been as favourable as in the Siwaliks which have yielded the fossils of the Ramapithecus and Shivapithecus. Here the climate was possibly not much different from what it has been in the Potwar region which housed the Soan Culture. Areas west of the Tien-Shan and the Pamirs, it is significant to note, were never covered by ice-sheets comparable to that in Europe and

North America. Here it has been presumed that during the glacial periods, intermittently cold rainy conditions occurred along with a substantial rise in inland seas, like the Caspian. It has been stated that with the onset of cold climate this part of Asia was practically invaded by northern peri-glacial fauna as is evidenced by the bones of the mammoth in the Fergana Valley as well as near Alma Ata, the capital of Kazakhstan. Not only that, the remains of woolly rhinoceros have been discovered near Tashkent and in a number of places in the Tien-Shan mountains. The fauna associated with the habitations of the Middle Palaeolithic Neanderthals, *e.g.*, Siberian goat at Teshik-Tash, mountain sheep and bear at Aman Kutan, and ass at Ogzi-kichik, also gives us supporting evidence.

Some significant studies were also made during the last decade to understand the geological formations of the Kara Bura region and the terraces of different rivers of the Syr Darya System, as also the thallassostatic terraces and other sea-water formations along the Caspian Sea. At Shugnou, on the R. Yakshu, Pleistocene terraces and deposits were also studied. But these studies have been too sporadic to give us a clear picture of the overall climatic oscillation and the resultant geological formations and geomorphological changes in the landscape of the Pleistocene Central Asia. Till recently, the situation had not been very much different from what it is at present in India and her borderlands. However, before we give the details of the recent advances made by Soviet geologists, we will like to present the data obtained before 1973 so that the historical perspective in these studies is maintained.

GEOLOGICAL FORMATION AND PALAEOLITHIC ASSEMBLAGE—THEIR CORRELATION

PREVIOUS WORK

Ranov 1973

"The Central Asian stratigraphy of Quaternary sediments is based on the recognition of four denudation cycles or complexes. To each of these complexes belong a definite thickness of Quaternary sediments in the region of accumulation basin and synchronous erosion-aggradation forms of relief in the elevated region. The existence of these cycles is expressed in terrace formations in the river valleys.

There is a small resemblance in the stratigraphic scheme of the Central Asian Quaternary sediments and the scheme of H. de Terra which he drew up for the North-West India. And this is natural since both the territories belong to the mountain raisings and piedmont-plains regions. But there are also great differences. In *H. de Terra's stratigraphy lies the Himalayan cyclic glacial epoch and that in the scheme of Central Asia lie the rythms of tectonic movements of the mountains*. Climatic changes of the planetary order are settling on the latter. Unfortunately, less importance is attached to Central Asian Scheme and archaeological remnants. In any case, according to data of the geological works (Vassikovsky 1957; Kostenko 1958), the above mentioned complexes can be described as follows :

a. Nanai (Kulab) Complex-Q*$_1$

These are the most powerful Quaternary sediments of Central Asia, presented by conglomerates of different degrees of cementation of stones, loess, clays, etc. Considerable dislocation is typical of them. Geomorphologically, these are high *adirs* (piedmonts) surrounding each valley of Central Asia. The fauna corresponds with Koshkurganian Complex of Kazakhstan, the *Palaeoloxodon antiquus* (Falconer and Cautlau), *Dicerorhinus etruscus* (Falc) *Equus sussenbornensis Wut* (stenonis), etc. (Bajanov and Kostenko 1962) are, typical of them; correspond with Boulder Conglomerate and terrace T$_1$ in the Punjab.

b. Tashkent (Illjak) Complex—Q$_2$

Geomorphologically, this complex is expressed by a basic loess terrace of valleys (usually IV and V from below) and low *adir* levels. They are subdivided into two parts : early Q$_2$1 and young Q$_2$2. In both cases bionomial division of sediments is typical, in the lower part lies basal conglomerate and in the upper one the suite of loess rocks (loess and silt). The fauna of the lower part corresponds, with the Khazarian one of Kazakhstan and Europe, namely: *Mammuthus trogentherii* (Phol) *Mammuthus primigenius* (Blum) the early form, *Bison priscus longicarnis* V. Grom, etc. The composition of the fauna of the upper-part of the complex is not quite clear yet. Possibly, it is close to the upper Pleistocene (mammoth) fauna complex, which is particularly indicated by the fauna from Mousterian caves of Jeshin-Tash, Aman-Kutan and others which are close to the present one (Movius 1953a 47-49; Bibikova 1958). The Tashkent complex partly corresponds with terrace T$_2$ in the Punjab (Kourdukov 1951).

c. Golodnostepskian (Dushambinskian) Complex—Q$_3$

On the whole, river terraces of this cycle have structure analogous to the terraces of the previous complex, although their upper part (silt) differs in the lesser uniformity of the structure. These are the III (rarer II and IV) overflood-land terraces.

On the northern regions of Central Asia and Kazakhstan, the fauna of this period (upper palaeolith or mammoth complex) contains the late form of *Mammuthus primigenius* Blum, *Coeledonta antiquitatis* Blum, and others. On the south, it is close to the present one and includes such animals as *Ovis ammon* L., *Capra sibirica* M., *Canis lupus* L., and others. In the plan of the cited comparisons this complex corresponds with the T$_4$ (terrace) in Punjab.

d. Syrdaryanskian/Amudaryanskian Complex—Q$_4$

These are sediments corresponding with the present day flood-plains and

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*We give two principal demoninations : for region attached to Tashkent and Tadjik depression. For different regions of Central Asia there are native denominations, which may be correlated with each other. *Cf.* S.A. Nesmeyanov, 'To the problem on stratigraphic schemes of Quaternary sediments in Western Tien Shan *Bulletin Komsiii isuchnia Chetverti chnoge*, Perioda No. 30, 1965, (in Russian).

sometimes with the first two overflood-land terraces.

The indices, corresponding with the cited complexes are : Q_1, Q_2, Q_3, Q_4, and designate a mere succession of complexes in the opinion of some investigators, whereas others compare them with the indices of international school accepted in the 2nd INQUA congress in 1932: Q_1=G, GM and M-Alpine sequence; Q_2=MR and R; Q_3=RW and W. Some of them approach the opinion of P. Volschtedt, who considers that Q_3=R, RW and W (Oakley 1964, 15–16). There are some other versions too. All these variants specify geological simultaneity of all terrace sediments of a single cycle. Recently, a new idea was offered indicating that in a number of cases the upper part of the terraces of the Tashkent complex form a younger "top-soil thickness" (Kostenko and Ranov, 1966). Comparison of archaeological materials and geological sediments were considered in a number of works (Ranov, 1962, 1965)."

RECENT WORK : 1973-77

Palaeolithic studies in Soviet

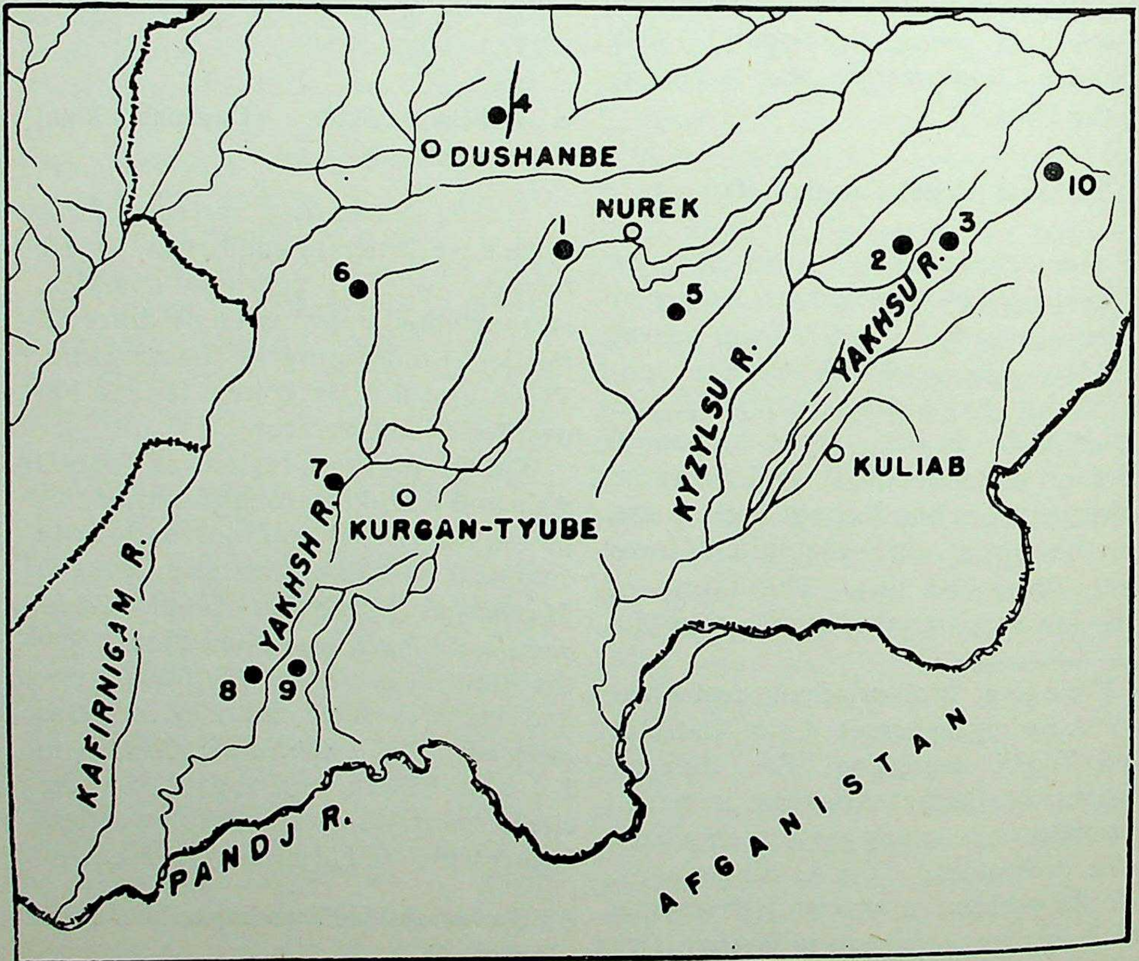
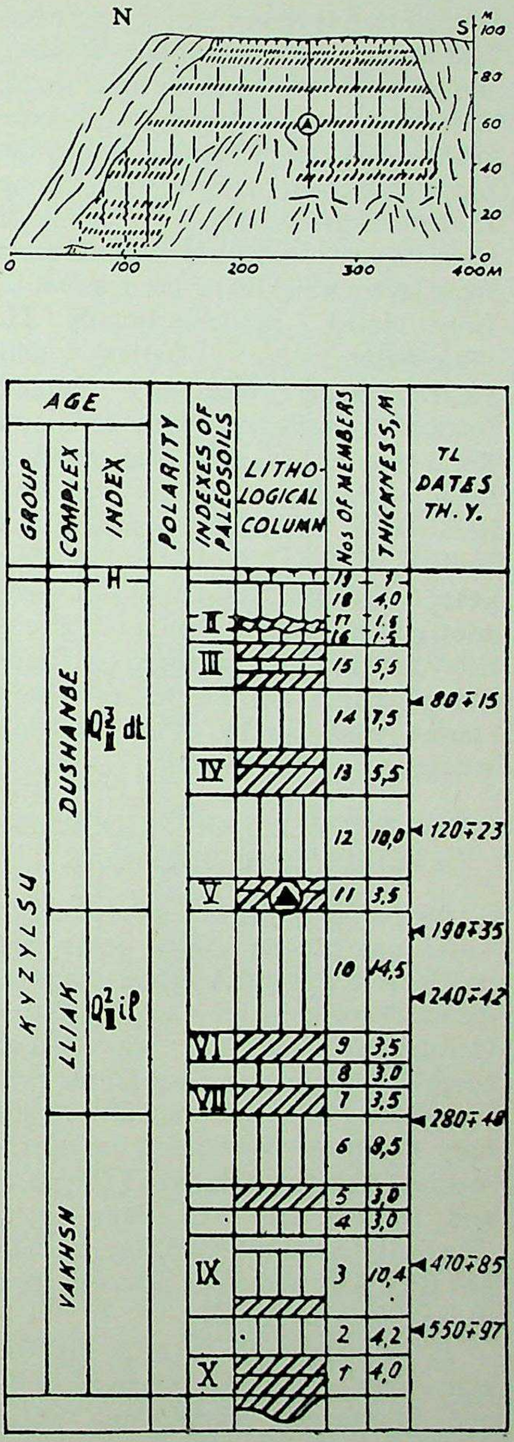


Fig. 2.1. Main Palaeolithic sites in southern Tadjikistan. The Lower Palaeolithic 1—Karatau I; 2—Lakhuti I; 3—Khonako. Middle Palaeolithic (Mousterian) 4—Semiganj, 5—Ogzi-Kichik; 6—Fakhrabad Pass; 7—Kyzyl-Kala; 8—Ak-Jar; 9—Kara-Bura; 10—Shugnou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LITHOLOGICAL COLUMN
Nos OF MEMBERS
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TL DATES TH. Y.
H
KYZYLSU
DUSHANBE
LLIAK
VAKHSH
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V
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17 1,5
16 1,5
15 5,5
14 7,5
13 5,5
12 10,0
11 3,5
10 14,5
9 3,5
8 3.0
7 3,5
6 8,5
5 3,0
4 3,0
3 10,4
2 4,2
1 4,0
80∓15
120∓23
190∓35
240∓42
280∓48
470∓85
550∓97

Fig. 2.2. Khonako I outcrop (upper); and Khonako I section (lower)

Central Asia till 1973, as may be seen from the details given above, were not based upon solid foundations of geological studies although some individual areas were studied and some correlations were attempted. However, often guesses were more and realities fewer. Things started changing from 1972 when A.A. Lazarenko found some Lower Palaeolithic tools in a well-stratified loessic deposit of southern Tadjikistan. Later on A.Y. Dodonov discovered a similar situation in Khovaling area. After getting a definite clue from these explorations, a concerted effort was initiated in 1973 to understand the chronological and environmental conditions of the loessic horizons from which Palaeolithic tools were now picked up. (For details see Appendix I)

Till 1977 a total of 22 Palaeolithic sites were located in the Tadjik Depression. Of these, nine belong to the Lower Palaeolithic, eight to the Middle Palaeolithic (Mousterian) and five to the Upper Palaeolithic (Fig. 2.1).

Of the nine Lower Palaeolithic sites Karatau I and Lakhauti I were chosen for the most systematic work. The work started in 1973 and is still continuing. But in order to make a detailed study of the geological horizons a large-scale programme has been launched in the field of Quaternary Studies.

LOESSIC FORMATIONS WITH PALAEOSOILS

Southern Tadjikistan has now turned out to be a heaven for Quaternary geologists since it is a unique area in the world where extensive loessic deposits have been found in the form of high and large hillocks with several undisturbed layers of buried-soils overlaid by loess, in a rythmic fashion, alternating up to as many as 25 times, the lowest going back to Pliocene times. Of these, counting from the top, I to X levels of palaeosoils, belong to the Pleistocene (Fig. 2.2). Some of these deposits have yielded stone tools from layers which have been scientifically dated, particularly by TL (Thermoluminiscent Dating) and palaeomagnetic methods. Faunal (mammal) fossils, molluscs, etc., and floral remains have also been found in them. Lithological studies have also been done for direct climatological studies of the last 1·5 to 2 million years. All put together, will very soon give a complete picture of Palaeolithic man in Tadjikistan in his environmental setting. The picture has already started emerging by the following studies.

THE PROBLEM OF PLIOCENE-PLEISTOCENE BOUNDARY

As in other parts of the Palaeolithic world, one of the major geological problems in Central Asia has also been the exact location of the Pliocene—Pleistocene boundary since that becomes the starting point for the prehistorians In Tadjikistan this boundary has been determined at Karamaidan, Karatau, Khonako I (Fig. 2.2) and II (Fig. 2.3), Chashma-Nigar, (Fig. 2.4), Lakhauti, Kuraksay, Karyubak (Fig. 2.6), and other places in river valleys, such as Ak-Jar.

It is significant to note that the entire area of Tadjik Depression is one of the largest aggradational areas in Middle Asia. During the Neogene (Miocene) and Anthropogene (Quaternary) periods, it was drained by the waters of the integral system of the Palaeo-Amu Darya. It is precisely due to it that the Neogene and Anthropogene formations today are found from the Pamirs, Hindu-Kush and Hissar (Gissar) down to the Caspian Sea. In this context, it is to be borne in mind that the stratigraphical sequence in the Caspian deposits is regarded as the basis for the USSR uniformed scheme of the deposits of this age. Obviously, the Tadjik sequence gives a new dimension to the Caspian Sea sequence and makes the geological story of USSR more reliable and fuller. The Tadjik sequence of Pliocene/Quaternary stratigraphy presented below is that worked out by A.Y. Dodonov and A.V. Penkov; of course, their concepts are based upon the initial scheme proposed in 1973 by I.I. Krasnov and K.V. Nikiforova, which was earlier adopted by Ranov.

To begin with, the term 'Tadjik Depression' stands for the Soviet part of the Afghan—Tadjik basin. It is generally low and is located south-west of the high mountain ranges of the Hissar-Alai and north-west of the Pamir-Hindu-Kush. Geologically, this region is a tectonic depression filled with sedimentary deposits and situated between the protrusions of consolidated pre-Mesozoic rocks. At the same time, this area, being a mountainous territory, (intensely dissected), is an area of a predominant denudation of Mesozoic and Cenozoic deposits. During the Mesozoic and the first half of the Cenozoic, the Tadjik depression was developing as an eastern margin of the vast Turan platform. At the end of the Paleogene and during the Neogene, tectonic movements considerably increased their activity and the Pamirs and the Tien Shan mountain edificies were formed with the Afghan-Tadjik depression between them. During the Quaternary, the mountain framing continued its rise, the intensity and differentiation of the movements within the depression and its framing increased. Thus, the structure of the region became very much complex. Nevertheless, the major structural elements of the depression are oriented submeridionally and represented by the Surkhan, Vaksh and Kuliab synclinal zones and the Baysun, Kafirnigan and Obigram anticlinal zones. Besides, the Dushambe downwarp (piedmont step) is known in the foothills of the Hissar (Gissar)-Alai (Alay).

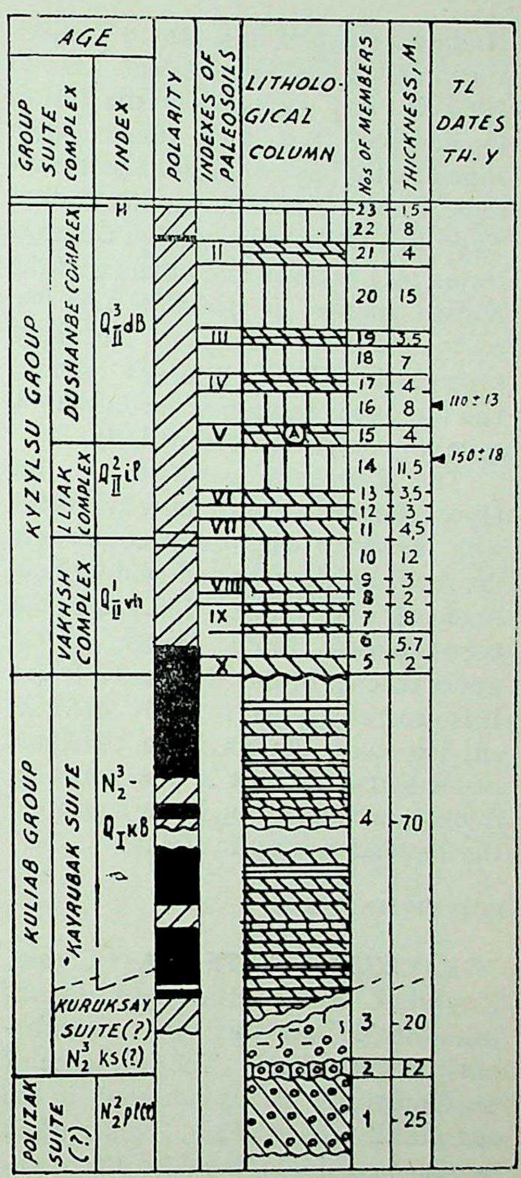
With this much of geological background of the Tadjik Depression, we may now consider the actual stratigraphy of the entire Cenozoic Deposits with special reference to Upper Pliocene and Pleistocene.

Stratigraphy of the Cenozoic Deposits

The Cenozoic Deposits have two major divisions : the older is Neogene System, and the younger is Anthropogene. The Neogene System includes Miocene and Pliocene strata while the Anthropogene System includes Eopleistocene and Pleistocene strata.

MIOCENE

The Miocene strata in the marginal area of the Depression include Baljuan Khingou and Tavildara suites. In the central area, strata, as old as the latter two suites seem to form the Kafirnigan Suite composed of grey sandstones with rare interbeds of brown silt-stones.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THICKNESS, M.
TL DATES TH. Y
KYZYLSU GROUP
DUSHANBE COMPLEX
LLIAK COMPLEX
VAKHSH COMPLEX
KULIAB GROUP
KAYRUBAK SUITE
KURUKSAY SUITE(?)
POLIZAK SUITE (?)
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8
5.7
2
70
20
2
25
110 ± 13
150 ± 18

Fig. 2.3. Khonako II : Schematic section

PLIOCENE

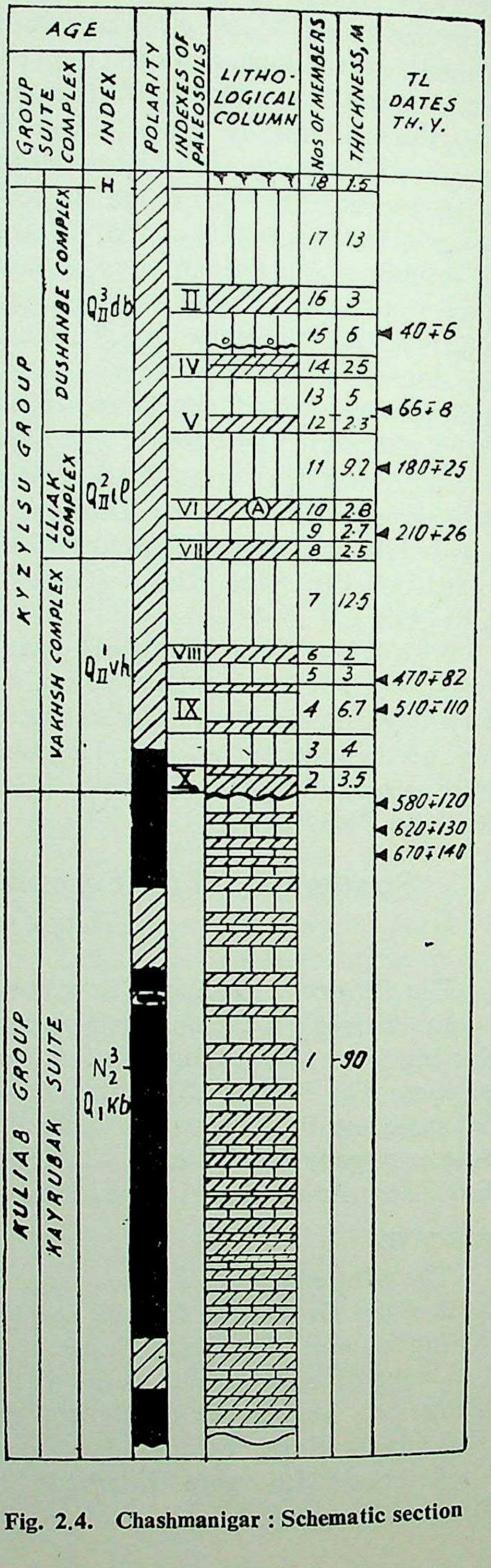
The Pliocene has the Lower, the Middle and the Upper strata. The Lower and the Middle strata are represented by the Karanak suit and the Polizak suite (Fig. 2.3). The Upper Pliocene is represented by the Kuruksay suite. Here it may be interesting to recall an old controversy. In the thirties authors like A.R. Burack studied a complex in southern Tadjikistan, called Kuliab complex. Up to 1962 it was included in the Lower Quaternary. But then doubts were raised on the basis of detailed paleontological and paleomagnetic studies. Thus, in 1971 it was finally demonstrated by Loskutov and others that the Kuliab complex is divisible into two parts—the lower belongs to Kuruksay suite (of the Upper Pliocene period) and the upper belongs to the Kayrubak suite (of the Pliestocene period).

The Kuruksay deposits of the Upper Pliocene times usually overlie with a sharp angular unconformity the rocks of Miocene and Middle Pliocene age, and older. This suite has been studied more deeply in the upper reaches of the Kuruksay River. It is generally found strongly deformed. However, the maximum thickness of the Kuruksay suite in the zones of thickest accumulation in the south of the depression is up to 500 m.

EOPLEISTOCENE

KAYRUBAK SUITE: As a rule, Kayrubak Suite overlies the Kuruksay suite with definite signs of uncomformity between them. The evidence of uncomformity is pronounced in the tectonically active zones. It is marked by sharp erosional break with angularities and undulations.

The Kayrubak suite is represented both by subaqueous (alluvial and alluvial-proluvial formations) and subaerial (loess-soil formations) facies. It is significant to note that the subaqueous complex of sediments fills up the old valleys and the negative structural forms, whereas the subaerial (loess-soil) accumulations are mainly developed upon the watersheds. The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LLIAK COMPLEX
VAKHSH COMPLEX
KULIAB GROUP
KAYRUBAK SUITE
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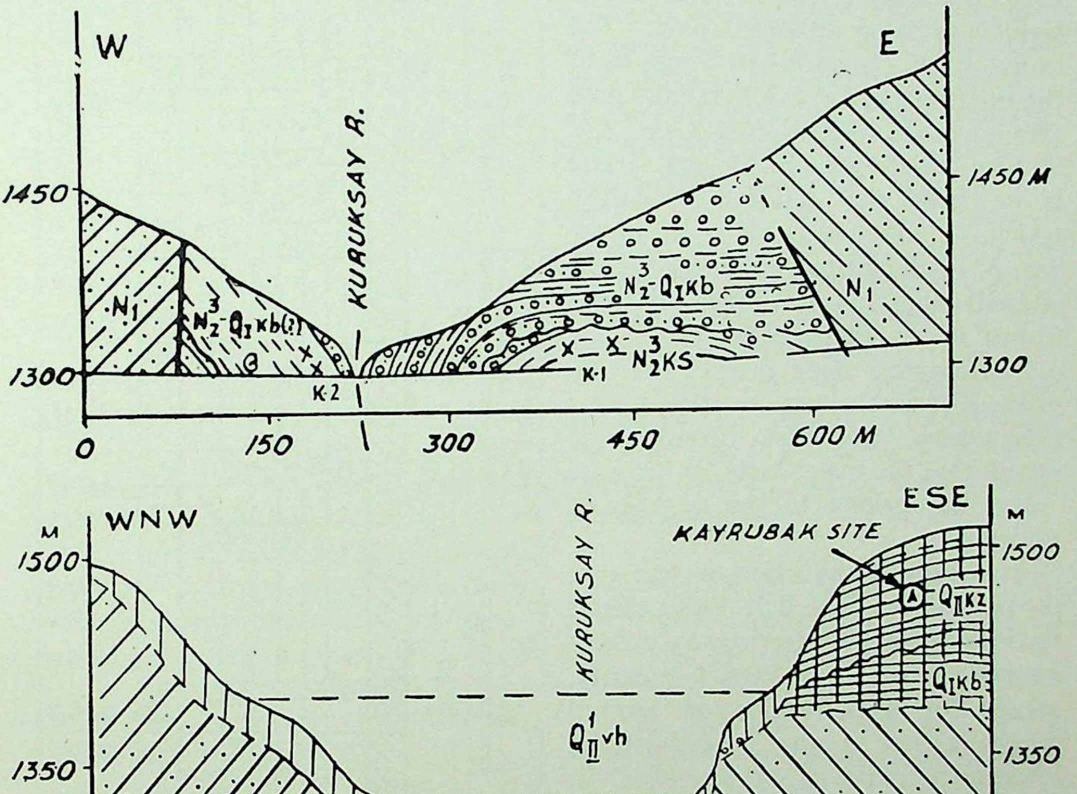
8 2.5
7 12.5
6 2
5 3
4 6.7
3 4
2 3.5
1 -90
40∓6
66∓8
180∓25
210∓26
470∓82
510∓110
580∓120
620∓130
670∓140

Fig. 2.4. Chashmanigar : Schematic section

sequences of the Kayrubak suite of the subaqueous type are beautifully represented through various colours of deposits in the valleys of the Kuruksay Obimazar, Kyzylsu, Vaksh, in Kara Maidan, and in some other places. The subaerial sequences are also found at several places but only fragmentary, except for Chashma-Nigar outcrop (Fig. 2.4) where the stratigraphy is full and complete.

Field observations clearly show that the subaerial formations of the Kayrubak suite are represented by alternation of soil and loess horizons while the subaquous formations are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K-1
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150
300
450
600 M
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M
KURUKSAY R.
KAYRUBAK SITE
1500
1500
Q_{II}kz
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1350
1350
Q_{II}^2il
Q_{II}^3db
N_1
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N_1
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(N_2^3)Q_IKb
1200
1200
0
1
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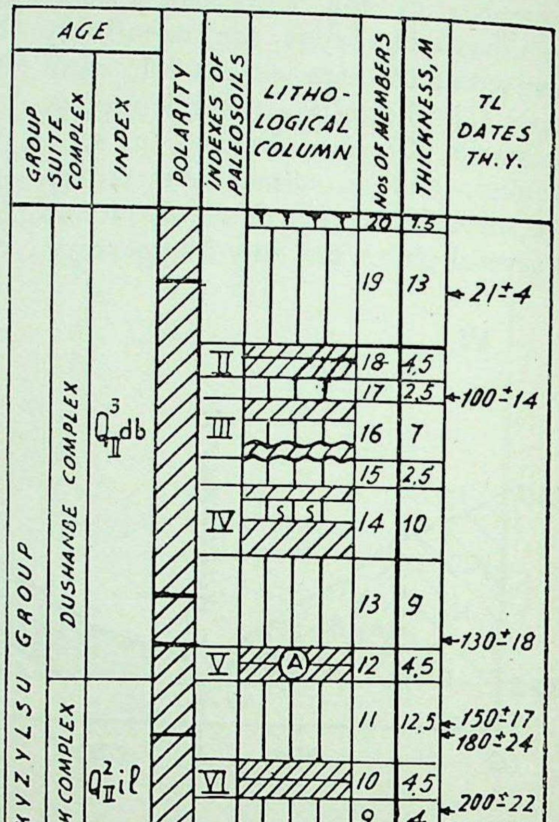
4 KM.

Fig. 2.5. **Upper : Transverse schematic geological—geomorphological profile of the Kuruksay River valley, 1.5 km south of the Kayrubak kishlak (village)**
Lower : Transverse schematic geological profile of the Kuruksay River valley near the mouth of the Navrukho Creek

represented by alternation of pebble (or sandy) beds with sandy-silty (or silty) ones. The thickness of the pebble-sandy and sandy-silty beds never exceed 5-7 m.

The bone-bearing horizons of the Kayrubak suite, particularly in Kuruksay and Lakhuti, have also yielded significant palaeontological data. The fauna from the bone-bed, confined to the upper part of the Kayrubak suite (the bone-bed of Kuruksay 3, *i.e.*, K3) is post-Villefranchian in age. The fauna from the Lakhuti-2 locality, which is also situated in the upper part of the Kayrubak suite, is connected with the transition from the Villefranchian to Pleistocene. Thus, the paleontological data restrict the age of the Kayrubak suite to the Lower Pleistocene. It must, however, be noted that the lower beds of this suite seem to belong to the upper-most Pliocene.

It is equally important to note that the Kuruksay (Fig. 2.5) and Lakhuti sections were characterized by palaeomagnetism of the reversed polarity, except for some events of normal magnetization in the uppermost and lowermost parts of the sequence. It suggests that the Kayrubak suite corresponds to the upper part of the Matuyama palaeomagnetic epoch, including the Gilsa and Jaramillo events.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KYZYLSU GROUP
DUSHANBE COMPLEX
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VAKHSH COMPLEX
KAYRUBAK SUITE
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Q_{II}^{2}il
Q_{II}^{1}vh
N_2^3-Q_IKb
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10 4.5
9 4
8 5
7 14
6 2
5 4.5
4 4.5
3 4
2 2
1 25
21±4
100±14
130±18
150±17
180±24
200±22
210±25
280±29
420±75
380±50
480±62
650±78
650±78
820±120
710±81
840±140

Fig. 2.6. **Kayrubak ; Schematic section**

PLEISTOCENE

KYZYLSU SUITE : As a rule, the deposits of the Kyzylsu suite overlie the deposits of the Kuyrubak suite but wherever the Kayrubak deposits are not there they are located on the Neogene formations, but in both the cases with an erosional hiatus and angular uncomformity. The Kyzylsu group is represented by loess-soil and alluvial or alluvial-proluvial formations. The sub-aqueous complex of the Kyzylsu is marked by a series of terraces set into Eopleistocene deposits. On the other hand, the loess-soil layers form the mantles on watersheds and on alluvial terraces. However, the most detailed sub-division of the Pleistocene can be obtained from the subaerial loess soil sections.

The Pleistocene deposits are very well exposed at Kayrubak (Fig. 2.6), Lakhuti, Khonake, Chashma-Nigar and Kara-Maidan outcrops. Here even the Eopleistocene deposits can be observed.

The boundary between Eopleistocene and Pleistocene is expressed in terms of unconformity directly under the X soil-complex or under the pebble beds correlated with it (Kayrubak, Chashma-Nigar and Lakhuti sections). The Matuyama/Brunhes reversal occurs some 1 to 3 m above the tenth soil complex.

The soils and pedocomplexes, numbering ten, have been distinguished in the Pleistocene loess-soil sequence, disregarding the recent soil.

LOWER PLEISTOCENE (VAKSH COMPLEX) 30 TO 35 m DEPOSIT

In the Lower Pleistocene are included, from bottom upward, X and IX pedocomplexes and VIII soil and intervening loess horizons, including loess above the VIII soil. These put together form what is called the VAKSH lithostratigraphic complex.

MIDDLE PLEISTOCENE (ILIAK COMPLEX) 30 TO 35 m DEPOSIT

In the Middle Pleistocene, VII and VI pedocomplexes, with loess horizons between them and above them, are included. These put together form what is called ILIAK lithostratigraphic complex.

UPPER PLEISTOCENE (DUSHAMBE COMPLEX) 50 TO 60 m DEPOSIT

In the Upper Pleistocene are included the subaerial sequence of V to I pedocomplexes and loess horizons between them. These put together form what is called DUSHAMBE lithostratigraphic complex.

It may be mentioned, even at the risk of repetition, that the above sequence is based upon geological conceptions, paleopedological analysis of fossil soils and palaeomagnetic and thermoluminescent data.

For purposes of prehistory, it should be mentioned that *Palaeolithic tools have been found within the VI and V Pedocomplexes of Middle (latest phase) or completely of Upper Pleistocene*.

ABSOLUTE GEOCHRONOLOGY OF DIFFERENT PLEISTOCENE PEDOCOMPLEXES

II Pedocomplex : It lies just below the Paleomagnetic event identical with the Laschamp event (22,000 years).

V Pedocomplex : Its age has been established by the paleomagnetic episode recognized above it and correlated with the Blake event (110,000 years) and also by some TL dates on loess; all suggesting that the age of this pedocomplex is within 100,000-150,000 years.

VI and VII Pedocomplexs : According to TL dating, it is placed about 200,000 and 300,000 years, respectively.

There are many other TL and other dates for different complexes, as may be seen in the figures of sections appearing in this chapter but these alone are of specific importance for the prehistorians because other complexes have not yielded tools, so far.

SUGGESTED CORRELATION WITH EUROPEAN SCHEME

The II Pedocomplex seems to correspond to the Bryansk or Powdorf soil.

V Complex can be correlated with the Mikolino or Riss-Wurm Interglacial.

VI Complex may be correlated with the Odintsovo Interglacial (R1-R2)

VII Complex can be correlated with the Likhvin Interglacial or the Mindel-Riss.

X Complex corresponds to the Cromerian of West Europe, may be IX has also to be included in the Cromerian since Cromerian is often regarded 'very considerable'.

CORRELATION OF LOESS DEPOSITS WITH FLUVIAL TERRACES

The Soviet geologists have attempted to correlate the pleistocene buried soils developed in the loess mantles on the watersheds with the alluvial deposits of the erosional aggradational terraces ranging in elevations above valley floors from 5-8 to 200-220 m. Both, the loess complex and the terrace complex, number ten. However, concerning the chronology of the upper terraces, *i.e.*, terraces over 80-90 m, geologists differ in their opinions, mainly because these terraces are poorly preserved in topography and often do not exhibit aggradational mantle. The age of the Dushambe terraces occurring below 80-90 m, on the other hand, is interpreted, more or less unanimously, as the Late Pleistocene. Significantly, for our studies, most of the Mousterian and late Palaeolithic finds are associated with Dushambe terraces.

Since Dushambe terraces are most important for our Palaeolithic studies a few words may be added to explain their characteristics.

Dushambe Terraces: The Dushambe terraces, dated to Upper Pleistocene, are composed of channel and flood-plain facies of normal alluvium, consisting of laminated silt, alternating with dusty sands and lenticular beds of poorly sorted gravels and pebbles. The normal alluvium of the terraces is replaced on the watersheds and valley sides by fossil soils and the arid alluvium is replaced by loess. The terrace alluvium is usually overlain by loess mantles containing fossil soils. The structure of the upper terraces (Iliak and Vaksh complexes) is, on principle the same, though their sections are most frequently fragmentary because of the subsequent denudation. The thickness of terrace alluvium ranges from a few metres to several scores of metres.

Glacial Cycles in the Pamirs

Glacials and Moraines : Glaciological studies, according to A.Y. Dodonov, have established three major generations of moraines in eastern Pamirs. Two older generations can be regarded as complex glacial sequences of late Pliocene (Kuruksay) and Eopleistocene (Kayrubak) ages. The youngest generation of glacial drift, corresponding, apparently, to the Pleistocene, includes up to ten end-moraines, well pronounced within glacial valleys.

The present overall position regarding the glaciation, according to A.A. Nikonov, is, however, as follows :

There are the remains of four glacial and three interglacial complexes. Of these, the Quaternary glacial complexes, numbering three, are well pronounced. The maximum phase of the last (late Pleistocene) glaciation seems to be older than ·027 to ·044 million years (abbreviated as m.y.) Tentatively, the maximum valley glaciation of the Pamirs may be assigned to the period of ·12 to ·3 m.y., *i.e.*, to the middle Pleistocene. Further, all deposits younger than the old (third from the top) glacial complex (which falls into an interval of ·5 1·0 m.y.) are related to Brunhes paleomagnetic epoch, and fall beyond the age of man in this part of the world.

The oldest glaciation of the Pamirs, according to Nikonov, has no counterparts in the Alpine scheme since it is older than the Biber. The Old Glaciation may, however, correspond to the Gunz and Mindel, the Main Pleistocene Glaciation may be correlated with the Riss, and the Last Glaciation with the Wurm.

SUMMARY OF PLEISTOCENE GEOLOGY AND CLIMATOLOGY IN SOUTHERN TADJIKISTAN

Geological Formations: In southern Tadjikistan, Soviet geologists have, in recent times, located upper Pliocene and Quaternary deposits of various facies. They have been sub-divided into five stratigraphic units: the Kuruksay suite (upper Pliocene), the Kayrubak suite (Eopleistocene), the Vaksh, the Iliak, and the Dushambe complexes (respectively, Lower, Middle and Upper Pleistocene). The subdivisions are based upon biostratigraphic, climatostratigraphic, geological and geomorphological and physical methods.

Geochronology: Major boundaries are established : (i) at the base of the Kuruksay suite, (ii) between the Kuruksay and Kayrubak suites, and (iii) between the Kayrubak suite and Vaksh complex : on the basis of geological events seen in unconformities, etc. According to paleomagnetic and biostratigraphic data, these three events are respectively dated to about (i) 3·5 million years, (ii) (ii) 2 million years, and (iii) ·7 to ·8 million years. From the Vaksh Complex we enter into the Pleistocene with ten levels. The Lower Pleistocene = Vaksh complex; Middle Pleistocene = Iliak Complex; and Upper Pleistocene =Dushambe Complex. The Vaksh starts from X and ends in VIII, the Iliak contain VII and VI, while the Dushambe includes the rest—V to I.

Geological Correlations: Climatostratigraphic units can be easily recognized in loess soil formations of southern Tadjikistan, both in the Pleistocene and Eopleistocene. These are layers of loess and buried soils (pedocomplexes). Ten levels of soil formation are pronounced within the Pleistocene sequence which can be correlated with the European scales. Within south Tadjikistan, the ten pedocomplexes of Pleistocene have been correlated with the erosional and aggradational terraces in the river valleys.

Palaeoclimate: On the basis of spore-pollen, palaeopedological and faunistic data, several phases of climatic change have been suggested: sub-

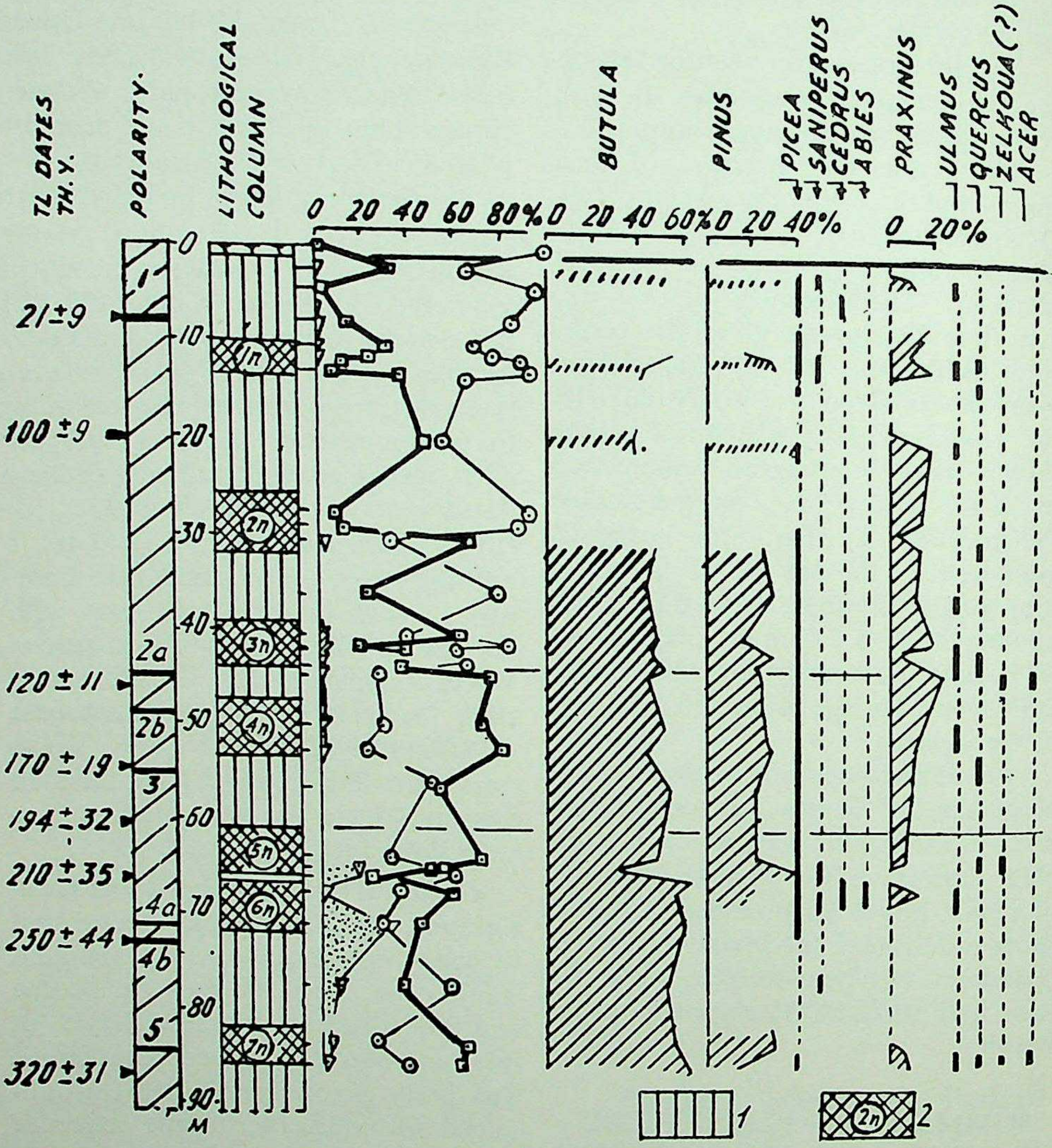

TL DATES TH. Y.
POLARITY.
LITHOLOGICAL COLUMN
BUTULA
PINUS
PICEA
SANIPERUS
CEDRUS
ABIES
PRAXINUS
ULMUS
QUERCUS
ZELKOUA(?)
ACER
0 20 40 60 80%
0 20 40 60%
0 20 40%
0 20%
21±9
100±9
120±11
170±19
194±32
210±35
250±44
320±31
1
2a
2b
3
4a
4b
5
0
10
20
30
40
50
60
70
80
90
M
1n
2n
3n
4n
5n
6n
7n
1
2n
2

Fig. 2.7. **Karatau section with the magneto-chronological scale and palynological characteristics; 1—loess; 2—buried soil complex and its index; 3—composition of spore-pollen spectra: (a) pollen of trees and shrubs, (b) pollen of herbaceous and brushwood plants, (c) spores**

humid ($N^3 2$ — Q 1), Semiarid (Q2) and Arid (Q3, also Q4 wherever found). On the background of aridization a number of moistening and drying (relative pluvials and arids) became evident. They were more distinct in the mountains and smoothed out in the piedmont zone of loess accumulation without causing abrupt changes in vegetation and soils.

The general strong aridization of climate in the Holocene coincided with

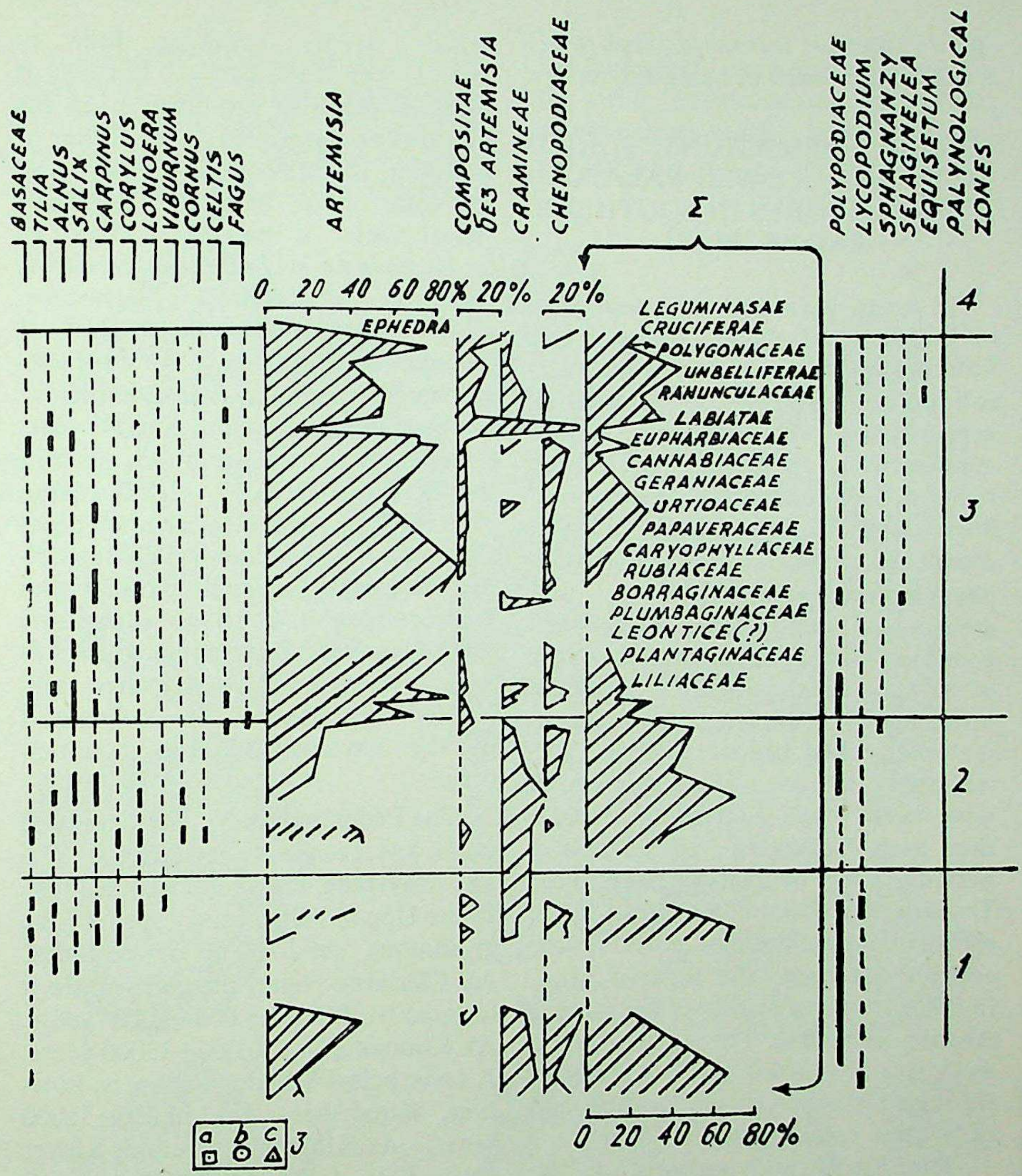


Fig. 2.7. *(continued from page 36)*

the end of the last (Dushambe) phase of a reduced loess formation.

PLIOCENE-PLEISTOCENE STUDIES IN REPUBLICS OTHER THAN TADJIKISTAN

The studies in the Tertiary and Quaternary geology have been extended to Kazakhstan, Uzbekistan and ares along the Caspian shores in Turkmenistan, and to other republics. Certain correlations have also been suggested, but, it must be admitted, that they are tentative. To that extent, we may ignore them for this monograph which is not at all aimed at being exhaustive.

LOESSIC FORMATIONS, BURIED SOILS AND LOWER PALAEOLITHIC CULTURES IN SOUTHERN TADJIKISTAN

In recent years, for the first time in Indo-Central Asian uplands a very firm footing was provided to the Palaeolithic cultures—they were dated by geochronological and other studies conducted in southern Tadjikistan between 1973 and 1977 by a team of Soviet scientists drawn from different disciplines, such as geology, geography, botany, zoology, physics and archaeology. Of course, it has been possible also because of the discovery of a very ideal situation : several huge deposits of buried soils and loessic material, called pedocomplexes, overlain each other in a rhythemic order, have been found containing palaeolithic tools belonging to successive periods. These deposits go back to the Tertiary period and come down to the early Holocene, thereby covering the entire Pleistocene, the Age of Man, in this part of the world; on the present showing, of course. The archaeological work was conducted by V.A. Ranov through a number of exploration and excavation expeditions.

The Pleistocene portions of the deposit cover ten pedocomplexes, the lowest, and, therefore, the oldest, being the X. Unfortunately, so far no definite palaeolithic tool has been discovered in the lower four complexes; the earliest tool-bearing level being Pedocomplex VI.

The Pedocomplex VI has been assigned to the Riss/ Wurm Interglacial which strictly, speaking, falls in the Upper Pleistocene. Locally, it falls in the Iliak sub-division of the Pleistocene formations, the earlier to it being the Vaksh sub-division, and the later to it being the Dushambe sub-division or complex. Thus, so far we have no evidence of palaeolithic tools in the Middle Pleistocene, although sometimes lower R/W is included in upper-most Middle Pleistoence. Be it as it may, Pedocomplex VI has been dated to around 200,000 years (since the layer below it has yielded the TL date of 210,000 ±2,600 years). This evidence dates the complex from Chashma-Nigar Section which has yielded the Lower Palaeolithic tools from Pedocomplex VI. The major prehistoric site belonging to this period, which has been systematically excavated and studied by Ranov, is Karatau I in the Yavansky-Karatau mountain range.

The Pedocomplex V, yielding stone tools, has been assigned to the Riss I/II Interstade. It, therefore, also falls in the Upper Pleistocene, but in the Dushambe subdivision or complex. At Chashma-Nigar, the layer above it is dated by TL to 66,000±8000 years. At Khonako, to 110,000±13000 years. A layer below V Pedocomplex is, however, dated here to 150,000±18000 years. At Khonako I Section, a layer above V is dated to 120,000±23000 years and a layer below V is dated to 190,000±35000 years. At Lakhuti, the layer immediately below V is dated to 130,000±15000 years. On all counts, therefore, it appears that Pedocomplex V may go back to 130,000 to 120,000 years from now. The Pedocomplex VI, on the other hand, may easily go back to 200,000 years.

It is significant to note that both in the VI and V palaeosoils, stone tools have been found in the lower part of the soil, being considerably concentrated near the calcareous crust. They have been, as it were, "suspended" within an interval of about 1·5 m immediately above the Illuvial carbonate horizon.

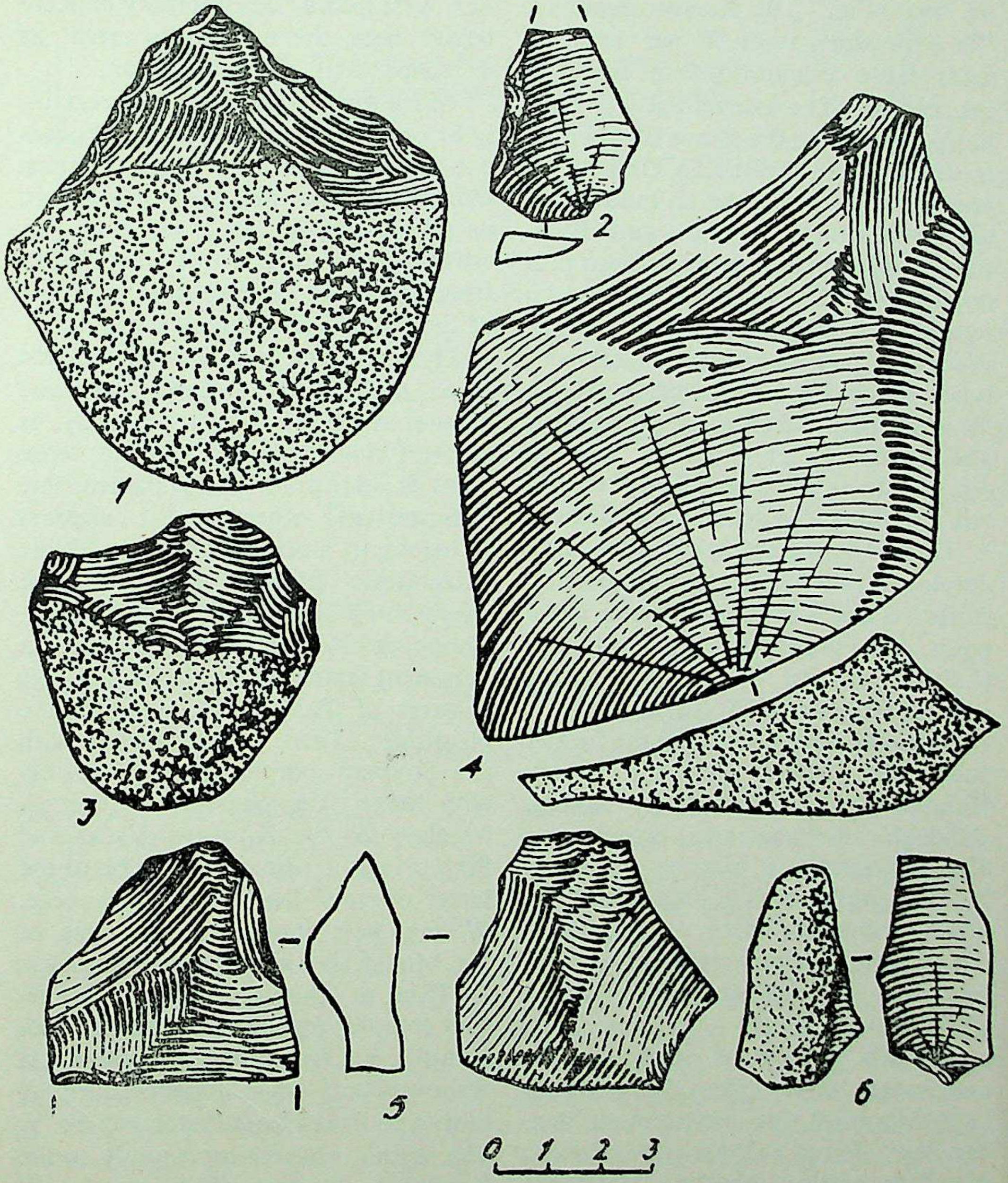


Fig. 2.8. Karatau I: Palaeolithic implements. 1,3—Choppers; 2—pseudo-Levallois flake, retouched on the bottom; 4—large flake of the Clacton type; 5—fragment of a biface (?); 6—primary flake

At the Karatau I site (Plates I and III) with in 124 sq. m (Fig. 2.8), the excavator found more than 200 stone implements while at Lakhuti I site (Plate II) he collected 452 tools within 216 sq. m. (Fig. 2.9) Ranov remarks, "In both cases, about 50 per cent of finds have unquestionable traces of processing. The assemblage of stone implements from the above sites belong to the so-called PEBBLE CULTURES and strongly resembles an industry of the Soan Culture of India and Pakistan..They include a small but well pronounced set of pebble tools : choppers, scraper like and grooved tools, flakes. Wedge-shaped flakes of a "citron" type, which have been used as blanks for implements, are widely distributed. The technology of prepared nucleus and blade is represented very poorly, but it is there. Whether this element is Levallois which at a later date developed into one of the Mousterian facies or not is at the moment a moot point. The industry of the Lakhuti I site seems to be somewhat more advanced than that of Karatau I (it is as it should have been since the former site is later in date than the latter). Handaxes are completely absent, although an unclearly pronounced bifacial technique can be observed. Massive implements of broken pebbles, having transverse edges and resembling cleavers (but not 'cleavers' as such) form a special group" (Ranov 1977, 47).

In this context it may also be mentioned that no trace of any dwelling, camp-fire or kitchen-midden, has been found at these sites. Ranov, therefore, makes another statement of far-reaching consequence. "It is possible that the stone processed by the man have been displaced from their original occurrence and buried in the course of the formation of soils on ancient slopes." His observation, it may be remarked, has some justification because the tools, as said earlier, were found 'considerably concentrated near the calcareous crust' as if "suspended" in that horizon.

More work, it is hoped, will certainly bring to light the actual site of occupation with tools and other cultural remains *in situ*. For the present, it is, on all counts, an epoch-making discovery and adds a lot to our understanding of the Palaeolithic cultures of the Pamiro-Himalayan foothills.

However, one point should be made clear, as hinted at at the outset : the culture, as will be shown presently, is Lower Palaeolithic only in the sense that it is pre-Middle Palaeolithic (Mousterian), otherwise it appears to belong to a very late stage of the Palaeolithic history. No doubt, it has a strong bias towards the Chopper-Chopping tools, but that has been a dominant feature of all the Stone Age cultures of Tadjikistan, including the Neolithic. Thus, its correlation with the Soanian complex is valid but only with some late phase of Soan A which, in the Kangara Valley and Pinjor region, also appear to be of the latest phase of the Middle Pleistocene. We may now consider other sites of Pre-Mousterian pebble-tool complex.

Thus, at Khonako I site pebble-tool complex has been located in Pedocomplex V. Similarly, at Khonako II Ranov picked up Chopper-Chopping tools and flakes from Pedocomplex V. The same observations apply to the Kayrubak Section—Pedocomplex V has yielded tools of the Chopper-Chopping culture. At other three sites the finds are very small in number.

SUGGESTED CORRELATION BETWEEN PRE-1973 AND POST-1973 STUDIES : THE INTEGRATED PICTURE OF QUATERNARY STRATIGRAPHY IN SOVIET CENTRAL ASIA AND INDIA

Geological Age	*Soan Terraces*	*Terrace and Sediment complexes*	*Buried soil—Loess Deposits in southern Tadjikistan*	*Paleosoils and tools*
P L E I S T	T_4 T_3	Syrdaryanskian/ Amudaryanskian Complex	Dushambe Pedocomplex	I *t* II *o* III *o* IV *l* V *s*
O C E	?	Golodnostepskian (Dushambinskian) Complex Q3	Iliak Pedocomplex	VI (*tools*) VII
N E	 T_2	Tashkent (Iliak) Complex Q2	Vaksh Pedocomplex	VIII IX X
EO- PLE- IST- OCENE	T_1 T_D	Nanai (Kulab) Complex Q_1	Kuliab Group : Kayrubak suite	
PLIOCENE				

Index to Soan Terraces : T_D=II Glacial; T_1=II Interglacial;
T_2=III Glacial; T_3=III Interglacial;
T_4=IV Glacial; T_5=Post-Glacial

GEOLOGICAL BACKGROUND OF THE MIDDLE PALAEOLITHIC CULTURES OF CENTRAL ASIA

As observed earlier, the Lower Palaeolithic tools were recovered from VI and V Pedocomplexes of 200,000 and 130,000 years old, respectively. But, according to V.A. Ranov (1977a, 132), a long yawning gap of at least sixty to seventy thousand years, if not more, occurs on the present showing. After that we start getting tools of the Middle Palaeolithic cultures. But not from the pedocomplexes, so far; they have been located on river terraces and caves alone.

In southern Tadjikistan, these tool-bearing terraces belong to the Dushambe Complex (Upper Pleistocene) and are as high as 50-80 m above the present level of the rivers. However, tools of the Mousterian facies (Fig. 2.9) have also been found on the low Iliak terraces (Middle Pleistocene)

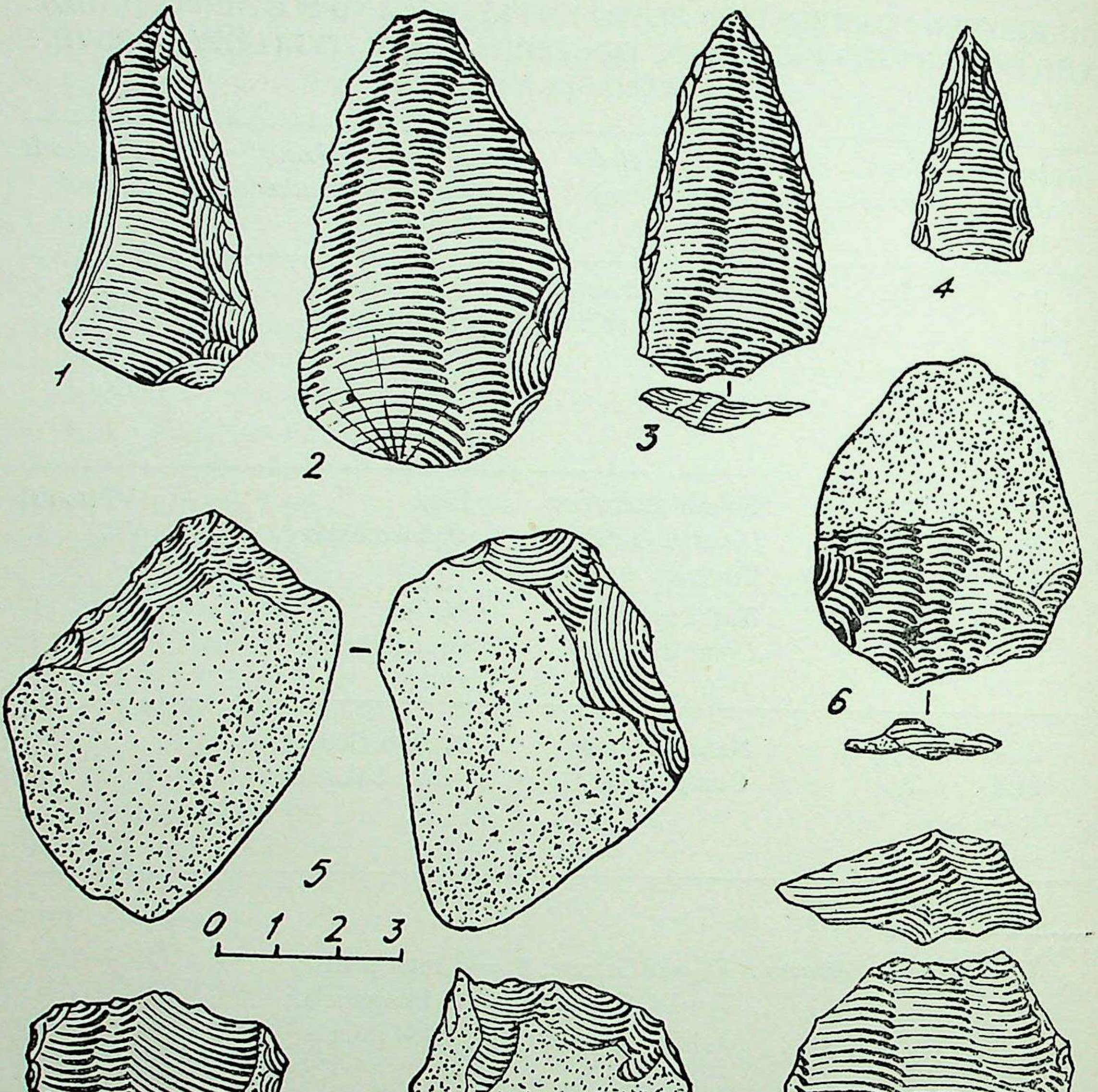


Fig. 2.9. Middle Palaeolithic implemetns from Ak-Jar and Kara-Bura. 1—side scraper; 2—oval blade of the Levallois type; 3—sharp point; 4—blade; 5—pebble tool (chopping-tool); 6—semi-primary flake; 7—pebble tool (chopper); 8—two-plane core. 1,2,7,8 from Ak-Jar; 3-6 from Kara Bura

which are located at the height of 90-100 m above the river, *e.g.*, at Ak-Jar and Semiganj (Semiganch). As mentioned earlier, no tool has been found on the higher terraces belonging to Iliak and Vaksh complexes (Lower Pleistocene).

There is, however, a basic contradiction in the observations made by Ranov as regards the alleged gap of 70-60,000 years between the Lower Palaeolithic and the Middle Palaeolithic finds. If Pedocomplex VI (from which Lower Palaeolithic tools come) belongs to the upper-most level of the Iliak complex and the Ak-Jar and Semiganj terraces (from which Middle Palaeolithic tools come) also belong to the same Iliak complex, then the question of such a big gap (70-60,000 years) hardly arises. But evidently, the available dates are only broadly so. The so far really reliable date of a Mousterian level is only 45,000 B.P. (TL date on a Mousterian nucleus discovered on the Fakhrabad Pass). This date undoubtedly falls in the late Dushambe Complex (Upper Pleistocene). There is, however, another aspect of the story : Ranov qualifies the term Mousterian with 'developed' ("......after this gap there appear rather numerous sites of the developed Mousterian, without any influence of a 'pebble technology', except Kara Bura, upon their inventary"). Obviously, he appears to stand by the theory that in Central Asia there are two stages in the Mousterian—'typical' (older) and 'developed' (later). The gap of 70-60,000 years has been visualized between the Lower Palaeolithic and the Developed Mousterian, which; in fact, will only mean between 'typical' Mousterian and 'developed' Mousterian since the 'typical' Mousterian of Ak-Jar and Semiganj come from the same Iliak complex as the 'Lower Palaeolithic'. Now, how far even this is correct is difficult to say because that will allow at least 100,000 years' span for the Mousterian Culture in Central Asia. Evidently, the problem requires more careful handling of the data, even though Kostenko and Ranov tried to overcome the difficulty by stating that 'in a number of cases the upper part of the terraces of the Tashkent complex (Iliak) form a younger 'top-soil thickness'. In this context the two authors have quoted the faunal evidence : "The composition of the fauna of the upper part of the complex is not quite clear as yet. Possibly, it is close to the Upper Pleistocene (mammoth) fauna complex, which is particularly indicated by the fauna from the Mousterian caves of Jeshin-Tash, Aman Kutan and others which are close to the present one."

A situation like this, it may be recalled, exists in the case of Pedocomplex VI of Iliak Complex the top of which is considered by some scientists as belonging to Dushambe Complex.

Obviously, the boundary between Middle Pleistocene and Upper Pleistocene has yet to be worked out in greater details and precision.

In any case, most of the Mousterian sites belong to the river terraces (T_3), belonging to the Golodnostepskian (Dushambinskian) Complex-Q_3 which is to be correlated with Pedocomplex IV, III and II of the Dushambian Complex. Obviously, most of the Mousterian assemblages belong to the Upper Pleistocene, although not the upper-most part of it. Ranov observes "the evolved (late) Mousterian in terms of the Central Asiatic scheme, must be determined conditionally, as $Q_2^2 - Q_1^3$, and, the final Mousterian (Obirahmat) as $Q_3^1 : Q_3^2$."

In this context, it may be mentioned that at Khonako I the top level of Pedocomplex II has yielded the TL date of 80,000±15,000 years while at Khonako II a level between Pedocomplex V and IV has yielded the TL date of 110,000±13,000 years. At Chasma-Nigar, on the other hand, the dates of similar situations is somewhat younger: 40,000±6,000 for a level below Pedocomplex II and 66,000±8,000 for a level above Pedocomplex V. At Kayrubak, the dates are again on the higher side—the level below Pedocomplex II has yielded the TL date of 100,000±14,000 years.

In this regard the TL date of 45,000 years of a Fakhrabad Pass Mousterian core may also be recalled. However, the ^{14}C dates, one on the charcoal dust from the roof of the tortoise layer in Ogzi-Kichik (15,700±700 years—No. LE 1050) and the other, again on the charcoal dust, from the first horizon of the Shougnou archaeological site (10,700±500 years—No. GIN—590) have been declared 'somewhat rejuvenated' and, therefore, much younger than their real age.

On the whole, it appears that the Middle Palaeolithic (Mousterian) in Soviet Central Asia extends from around 100,000—80,000 years to about 20,000—15,000 years from now, the lower limit being suggested on the basis of the TL dates of post-V Pedocomplexes and the upper limit being suggested on the basis of a TL date of the middle level of a post-II Pedocomplex at Kayrubak (21,000±4,000 years) as also on relative dating suggested by Ranov.

Mousterian is the best studied one amongst the Palaeolithic cultures of Soviet Central Asia.

GEOLOGICAL BACKGROUND OF LATE (UPPER) PALAEOLITHIC OF CENTRAL ASIA

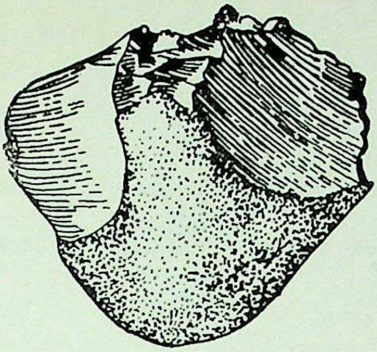
The Late or Upper Palaeolithic in Soviet Central Asia falls in the latest phase of the Upper Pleistocene. It is, therefore, covered under Pedocomplex I, dated to 21,000±4,000 years at Kayrubak (middle level). Since the margin of error is often too big in TL dating technique at present, ^{14}C dating is more reliable, provided the samples are uncontaminated and suggested 'corrections', such as the MASCA, have been taken into consideration. Unfortunately, there are not many such reliable ^{14}C dates for the Late Palaeolithic in Central Asia, the two quoted so far (see earlier section), as said earlier, have been declared contaminated.

There is yet another difficulty also. So far only two Upper Palaeolithic sites, the Samarkand and the Shougnou, have been properly studied and, therefore, the data at our disposal are limited. Ranov, therefore, apologetically tries to build up a rough chronological bracket as follows :

"The first horizon of the Shugnou site has a radiocarbon date of 10,700±500 years and the lower horizon, according to geological data, may be 20 thousand years older." It is obvious that the 10,700±500 date, which has been discarded at one place, has been acccpted here, albeit provisionally.

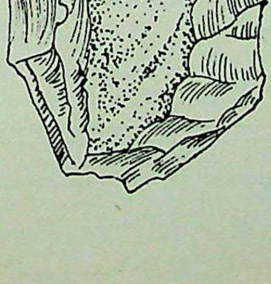
Ranov further observes: "For the Upper Palaeolithic there is little data but in any case even its most earliest stages cannot be older than the second half of Golodnostepskian (Dushanbiskian) complex, *i.e.*, Q_3^2." If so, the Upper Palaeolithic falls in the late phase of Wurm.

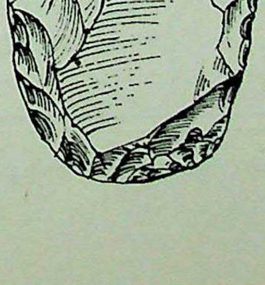
The Upper Palaeolithic sites are found both in caves and in open-air stations.

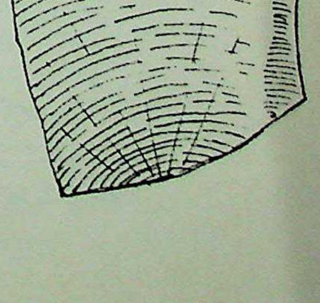


THE LOWER PALAEOLITHIC

↑
S.3.1.
S.3.2.→







S.3.1=A Chopper from a Lower Palaeolithic site in south Tadjikistan.
S.3.2=Handaxe from Krasnovodsk peninsula, surface collection.

An oval shaped Chopping tool (on pebble) from Khonako II, southern Tadjikistan; from stratified deposit.

A thick Clactonian flake (from pebble) from Karatau I, southern Tadjikistan; from stratified deposit.

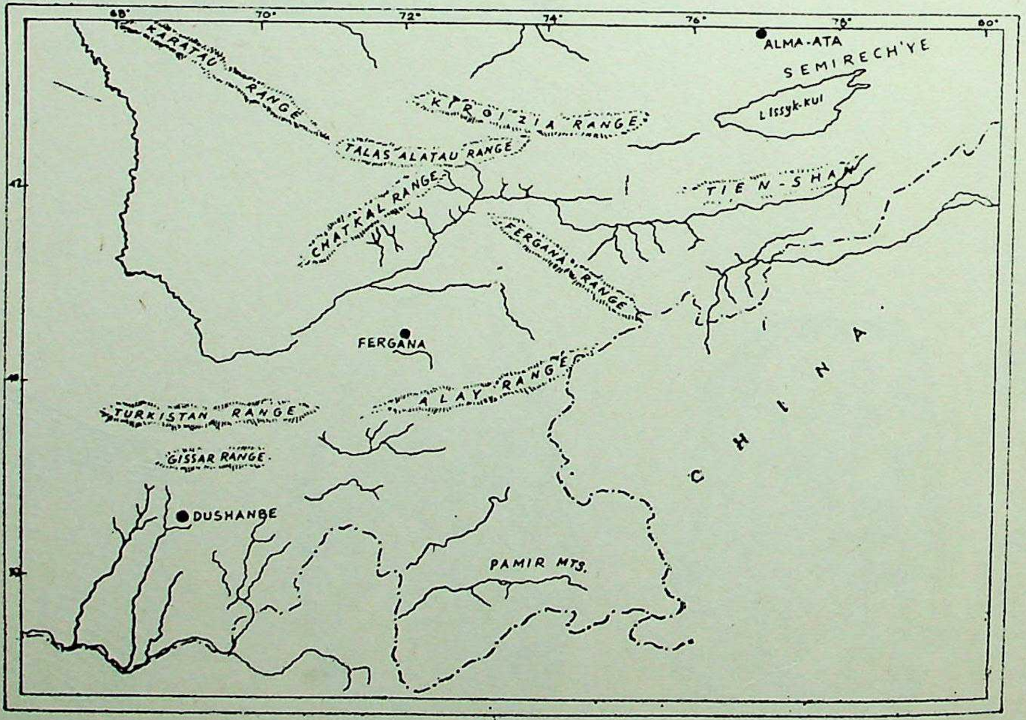

68°
70°
72°
74°
76°
78°
80°
42
40
38
ALMA-ATA
SEMIRECH'YE
Lissyk-kul
KARATAU RANGE
KIRGIZIA RANGE
TALAS ALATAU RANGE
CHATKAL RANGE
TIEN-SHAN
FERGANA RANGE
FERGANA
ALAY RANGE
TURKISTAN RANGE
GISSAR RANGE
DUSHANBE
PAMIR MTS.
CHINA

Fig. S.3. 3a Map showing important mountain ranges in eastern Soviet Central Asia

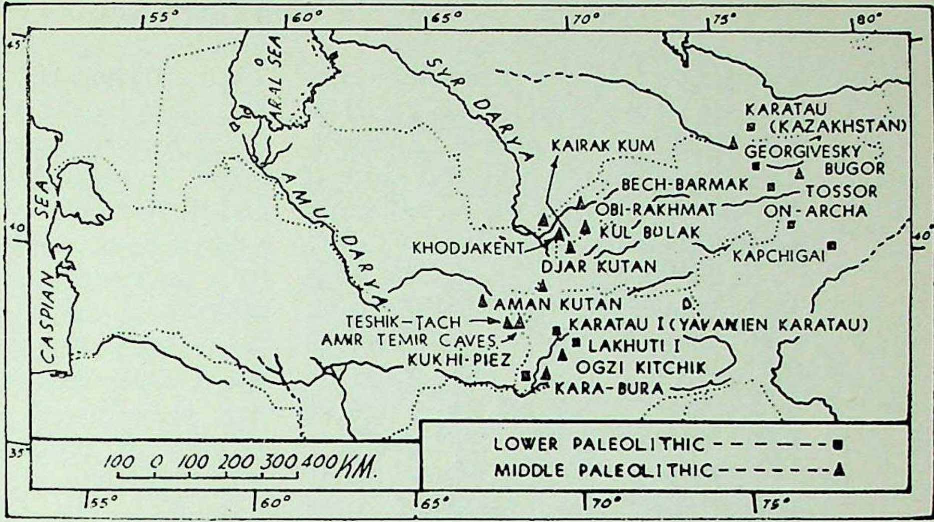

55°
60°
65°
70°
75°
80°
45°
40°
35°
ARAL SEA
SYR DARYA
AMU DARYA
CASPIAN SEA
KARATAU (KAZAKHSTAN)
KAIRAK KUM
GEORGIVESKY
BUGOR
BECH-BARMAK
TOSSOR
OBI-RAKHMAT
ON-ARCHA
KUL BULAK
KHODJAKENT
KAPCHIGAI
DJAR KUTAN
AMAN KUTAN
TESHIK-TACH
KARATAU I (YAVANIEN KARATAU)
AMIR TEMIR CAVES
LAKHUTI I
KUKHI-PIEZ
OGZI KITCHIK
KARA-BURA
100 0 100 200 300 400 KM.
LOWER PALEOLITHIC
MIDDLE PALEOLITHIC

Fig. S.3.3 Map showing important Palaeolithic sites

THE PALAEOLITHIC cultures of Soviet Central Asia has been divided into Lower, Middle and Upper, as elsewhere. The connected story of their discovery is not very old although the exploration and excavation of a Mousterian cave-site, Teshik-Tash in Uzbekistan, goes back to 1938 (Movius 1953). Forced by certain circumstances, the Soviet Government called upon some of its archaeologists to explore a few mountainous regions in south-eastern Kazakhstan—hydro-electric power stations were to be built and the areas were going to be submerged in water very soon. The area explored first in the early fifties, covered the valleys of the Upper Irtysh and its tributary, the Naryn. Tools recovered from this 'rescue' operation belonged to the Palaeolithic and Neolithic cultures (Chernikov 1951-1959; Okladnikov 1966). On completion of the two power-stations, the work was stopped in 1956. In 1954, however, Akishev (1956, 1958, 1959) had also explored areas north of Alma-Ata, on river Ili. These 'rescue' operations were soon followed by systematic explorations and excavations. From 1957 onwards Alpysbayev has been busy in exploring and excavating palaeolithic sites, especially in and near the Karatau mountain range in south-eastern Kazakhstan (Alpysbayev 1959, 1961, 1962, etc.)

Alpysbayev (1962) and Okladnikov (1966) published the results of some of the most significant palaeolithic discoveries at Borykazgan and Tanirkazgan (District, Djhambul), especially near the rivulet Arystandy, north of Chimkent, located in the same southeastarn zone of Kazakhstan.

In the later part of the sixties, some Early Mousterian and Neolithic sites were located in Central Kazakhstan, in the Sary-Su region, the Moinkum desert, Kyzyl-Djhar and the Karganda region (Klapchuk 1964, 1965, 1967).

In Kirgizia, although not so many explorations were conducted, yet a number of good discoveries have been made. Thus, in 1953 Okladnikov (1966) found a Lower Palaeolithic site with a few handaxes on the On-Archa, in the Tien-Shan mt. At Khodja-Bakirgan also he found similar tools. At Kairagach also, like On-Archa, Lower Palaeolithic tools were found in Quaternary sediments. Stray finds also came from Uch Kurganan Palnan. A couple of years later, he found the remains of the Upper Palaeolithic at Khodja-Gor, next to the Tadjik border (Ranov 1965). Then in 1956 Ranov started working in the Alai Valley and the Kyzyl Su basin, next to Daraut Kurgan (Ranov 1958). Okladnikov found some neolithic tools also in the Chu Valley on the Alamedinka river (Okladnikov 1954). In 1965 Ranov discovered an open-air Mousterian site, Tossor, on the southern bank of the Issyk-Kul.

In Uzbekistan also some important sites have been explored and excavated. Thus, between 1954 and 1961 Okladnikov and Ranov discovered a series of open-air Mousterian sites in the Kairak Kumy region of the Fergana Valley (Ranov 1965 and, Litvinsky, Okladnikov and Ranov 1962). Okhna and Kapchigai are the two other important Mousterian sites in the Fergana valley, near the Fergana town. In 1958-1965 A.P. Okladnikov and H. Nasretdinov found the Mousterian cave-sites of Khodja-Kent (I and II) in the environs of Tashkent (Ranov 1965) along the river Chirchik. Between 1962 and 1965, M.M. Gerasimov and R. Suleimanov carried out extensive excavations in the Mousterian cave-site of Obi-Rakhmat (Obi-Rahmat), located on the river Chatkal. It is significant to note that as far back as 1939 the Upper Palaeolithic site within the town of Samarkand was discovered by D.N. Lev, although he could excavate it only in 1958-1967 field seasons (Lev 1955; Ranov 1965). But earlier, he had excavated, between 1947 and 1956, the Mousterian cave-site of Aman Kutan in the environs of Samarkand, which, significantly enough, also yielded a rich collection of Pleistocene fauna (Ranov 1965). In the meantime, another Mousterian cave-site, Amir-Temir, located near Teshik-Tash in southern Uzbekistan, was also excavated.

In Turkmenistan also some very significant palaeolithic discoveries have been made. Thus, Okladnikov explored some sites in the waterless dry area of Krasnovodsk, on the eastern shores of the Caspian Sea (Okladnikov 1953, 1956, 1966). Then Markov (1966) excavated the Mesolithic-Neolithic cave site of Dam-Dam-Cheshma and also Dzhebel (Djebel), both located in the south-east of Krasnovodsk. In 1966 (Luzgin and Ranov) published their palaeolithic tools from central part of the Kopet Dag mountain in southern Turkmenia, at the site of Jangadja.

In Tadjikistan there are a number of Palaeolithic sites, twenty two, so far, belonging to all the three cultural divisions of the Palaeolithic. Besides, there are a number of Mesolithic and Neolithic sites. Most of these sites have been explored and excavated by Ranov (1962, 1964, 1965, 1976, 1977, etc.). Some of the important Lower Palaeolithic sites, besides Karatau I (Fig. 3.1) and Lakhuti I, and four others found recently by Ranov (1977) in the loessic hillocks of southern Tadjikistan, which have been described in some details in the Geology chapter, are the Kizil Kala, Kuhi-Pies, Koikitau, etc.; at the last mentioned site a hand-axe was also found along with an archaic flake. However, the Middle Palaeolithic sites have equally been discovered at several places in this republic, such as Kara-Bura, Jar-Kutan, Semiganj and Ogzi-Kichik. Tadjikistan has also yielded a very good Upper Palaeolithic site, Shougnou, in External Darvaz, on a 80 m high terrace of the Yakshu River. It has been excavated on a large scale. Belonging to the Mesolithic and Neolithic periods, is the site of Tut-Kaul, excavated by Ranov.

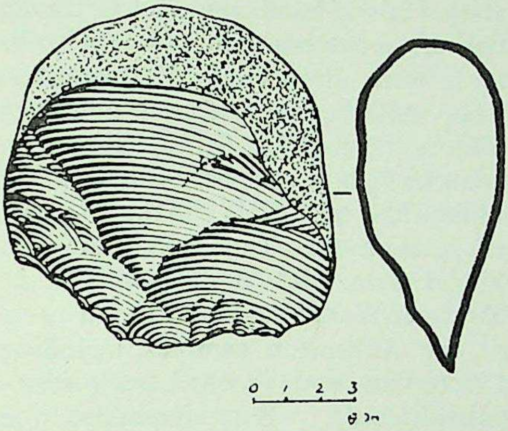


Fig. 3.1. A pebble Chopper from Karatau I

SITES AND TOOLS

The Lower Palaeolithic sites, known so far in Soviet Central Asia, are very few, numbering only about a dozen. For a long time, except for On-Archa and Kairagach, where tools have been found in definite geological context, all the known sites were open-air sites, such as Kuhi-Pies and Koiki-Tau, of practically non-descript character, many yielding not even a dozen tools. Therefore, the picture that emerged till 1973 has been far from complete.

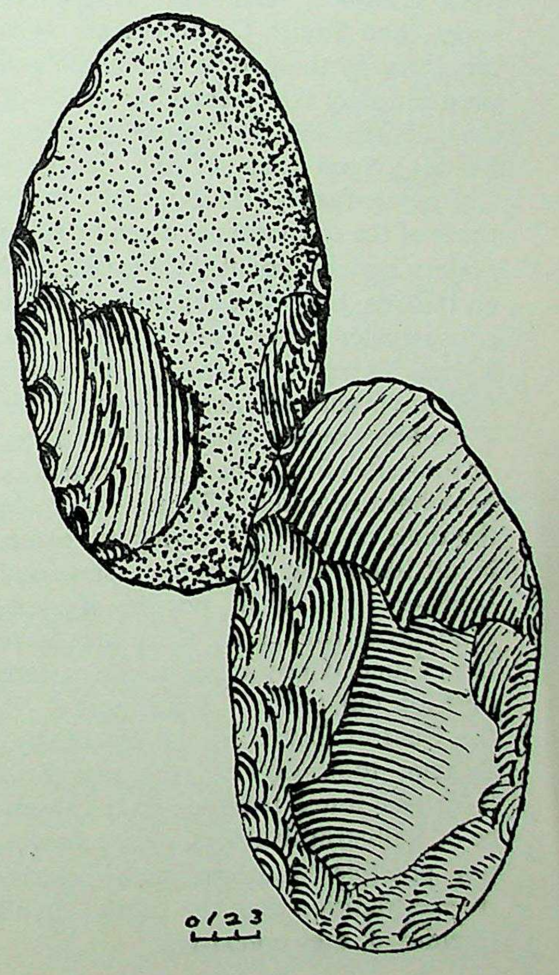


Fig. 3.2. A pebble Chopping tool from Khonako II

In 1973, however, Ranov discovered in Tadjikistan in the excavations at Karatau (I), in the Yavansky Karatau mountain range, called Yavanien Karatau, a well-stratified deposit of pebble-tool complex, technologically close to the Soanian Complex, including scrapers and points. It belonged to the end of the Middle, in fact the beginning of the Upper, Pleistocene, dated to 200-150 thousand years by thermoluminescent dating. The Karatau cultural remains have been found at six places (Fig. S.3.3) in deeply buried soils (Soil groups V and VI). It goes to show that Soviet Central Asia was inhabited by the people who made and used not only the Acheulian tools of the handaxe family, of course, very few, but also Soan tools of the Chopper-Chopping family. Those who made tools of the former types came from the western regions, possibly Caucasia, since on the one hand, the handaxe sites are concentrated in the western half of the Soviet Central Asia, and, on the other, they are practically absent in the Pamir -Tien-Shan region; there are only three or four sites from where stray examples have been reported. Those who made the tools of the latter category came, in all likelihood, from the eastern and south-eastern regions, possibly the sub-Himalayan zone, since these sites have been found concentrated in the eastern half of our region. Significantly, in the Central Zone, in the Syr Darya System, tools of both the traditions have been found together. In the absence of well-stratified sites, it is, however, not possible to determine the priority of one tradition over the other. In all likelihood, they co-existed.

Acheulean Complex

We may start with the Acheulean complex since its known sites are only a few. On the eastern shores of the Caspian Sea is the region of Krasnovodsk. In fact, the peninsula, known after it, has now and then yielded stray finds of handaxes and Clactonian flakes, sometimes with retouch. The tools were discovered by Okladnikov who, unfortunately, found only two bifaces (Fig. 3.3). Stray Acheulean tools have, however, been found in the Mangishlak peninsula and the lowlands of Kazakhstan. Thus, at Sari Arka in Kazakhstan, and at Tom-chi-Su in Turkmenia explorers have found tools of the Acheulean complex, including Clactonian and proto-Levalloisean-flake-discoids. But, possibly, the most important region from where the Acheulean tools have come is the foot of the Little Karatau hills in southern Kazkhstan. Here there are a number of sites of the Lower and Middle Palaeolithic cultures, belonging both to the Acheulean tradition and the Soan tradition. It is significant to note that at certain sites tools of the Acheulean tradition have been found overlaid with the deposits of the Acheulean-

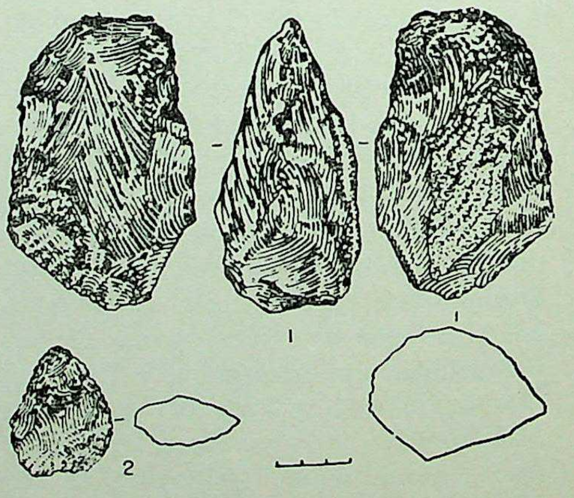


Fig. 3.3. Bifacial (Lower Palaeolithic) tools (handaxes) from Krasnovodsk

Mousterian complex. It may, however, be noted that these collections are devoid of true handaxes; only Clactonian scrapers and points, and discoids are found. At Borikazgan and Tokali, as also in Sari Arka, all in the region of Karatau ranges located in Kazakhstan, two or three handaxes, in each case, have been found, but usually alongwith choppers. Classical cleavers, it may be noted, are found absent at all the Acheulean sites known so far.

The total picture of the Acheulean in Central Asia is, therefore, very hazy. It appears to be in the nature of only trickling-down from its eastern-most concentration in trans-Caucasian peninsula. There, in Armenia, handaxes are found in large numbers at sites like Satani Dar, Djraber and Arzani ; in Azerbaijan they are found in the cave-sites of Azhikh and Zonskaya ; and in Georgia they have been located at sites like Kudaro. Obviously, the major handaxe tradition seems to have stopped on the western coast of the Caspian Sea.

Chopper-Chopping Complex

The situation with regard to Chopper-Chopping sites is slightly better since there are a number of good explored and excavated sites. But all of them do not seem to belong to one and the same time-bracket. It is significant to note that in certain areas of Tadjikistan their basic tool-types (Chopper-Chopping) continued to be made through the neolithic times. The surface collections are, therefore, very risky when it comes to date the stray finds or to allot them definite cultural horizons.

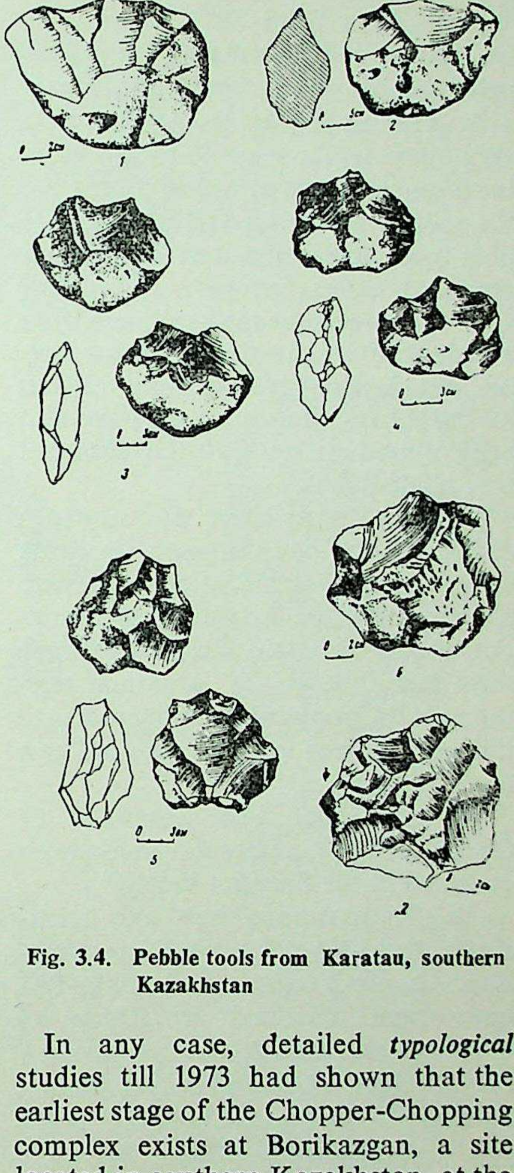


Fig. 3.4. **Pebble tools from Karatau, southern Kazakhstan**

In any case, detailed ***typological*** studies till 1973 had shown that the earliest stage of the Chopper-Chopping complex exists at Borikazgan, a site located in southern Kazakhstan, at the foot of the Little Karatau. The artifacts recovered from here include a large variety of crudely made Chopper-Chopping tools, flake tools and amorphous cores (Fig. 3.4). About this it has been said that 'both culturally and historically these complexes and individual artifacts are connected more with the zone of pebble-tools in south-east Asia and northern Indostan'. Then from 1973 onwards, at six places in southern Tadjikistan pebble tools were found in buried soils lying in the watershed loess at, a very great depth, some 50 to 56 metres. In the excavations at one of these sites, Karatau I, were found Chopper-Chopping tools, flakes removed from poorly prepared cores, scrapers and points and also wedge-shaped splinters from pebble splitting. In this context it may be noted that in 1975 some bifaces of the Mousterian type (?) have also been found along with Levalloisean type blade-flakes.

In Kazakhstan there are nearly a dozen sites of the Chopper-Chopping complex (significantly, often mixed with a few tools of the Acheulean tradition) but except for two sites, where they have been found in large numbers, the pebble Chopper-Chopping tools are limited to not more than half-a-dozen tools (Fig.3.5).

In Uzbekistan, two examples of Chopper-Chopping tools have been collected in the Fergana Valley.

In Tadjikistan, sites like Kizil-Kala, Kuhi-Pies, Kairak-Kum, Shor-Kul, Khodja-Bakirgan and Koiki-Tau have been classified by Ranov as 'Lower Palaeolithic'. Although each one of these has yielded only a limited number of Chopper-Chopping tools, yet, typologically, they may be grouped with the Borikazgan: they are large in size with only a few flake-scars with deep negative bulbs-of-percussion.

Ranov visualizes a later and developed stage in the make-up of the Lower Palaeolithic of the Chopper-Chopping group (Fig. 3.6)—mainly on the basis of tool typology (Fig. 3.7) tool finish and tool size, plus the associated flake tools. He calls it Tokali, after the type-site, located in southern Kazakhstan.

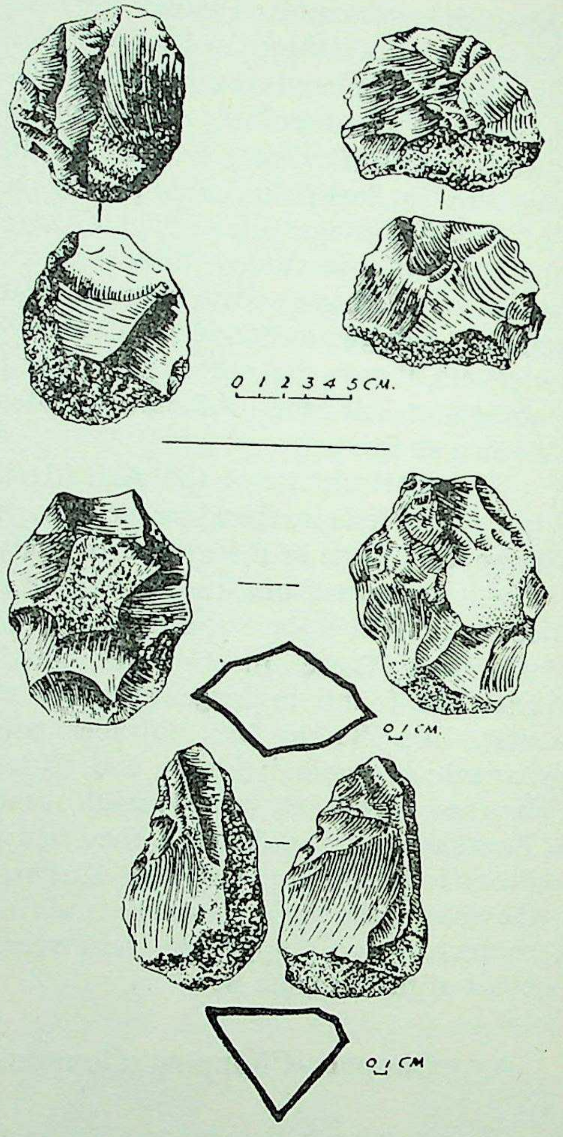

0 1 2 3 4 5 CM.
0 1 CM.
0 1 CM

Fig. 3.5. Lower Palaeolithic bifacial pebble tools from Karatau, southern Kazakhstan

The tools of this group are comparatively small in size and neat in look, displaying a series of small flake-scars. The associated material includes proto-Levallois flake-blade scrapers and points. They have been found at a number of sites in Kazakhstan, notably

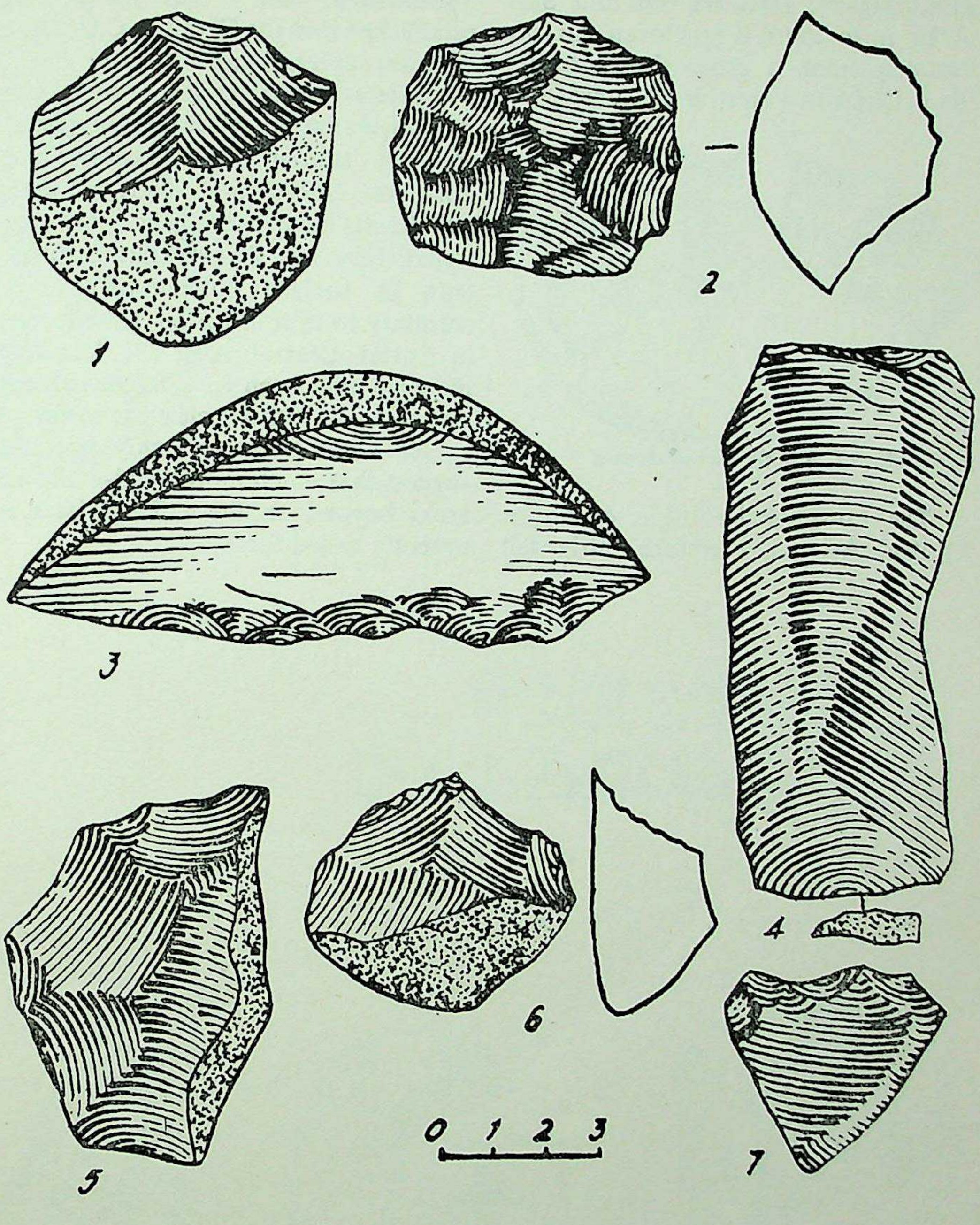


Fig. 3.6. Lakhuti I: Palaeolithic implements 1,6—Choppers; 2—"conic core"; 3—scraper; 4—blade of the proto-Levallois type; 5—flake of the "citron" type; 7—notched tool

at Karaigach, Isfairam Sai and Sari Arka in southern Kazakhstan. Unfortunately, none of these sites presents its material in a stratified context.

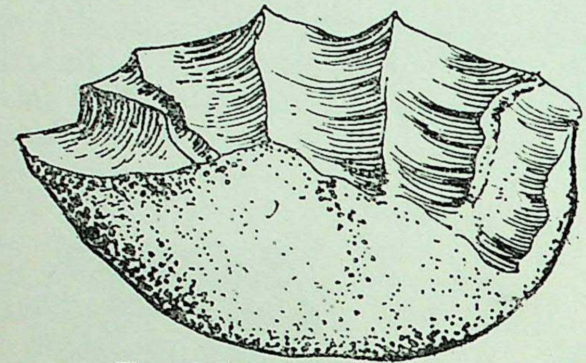
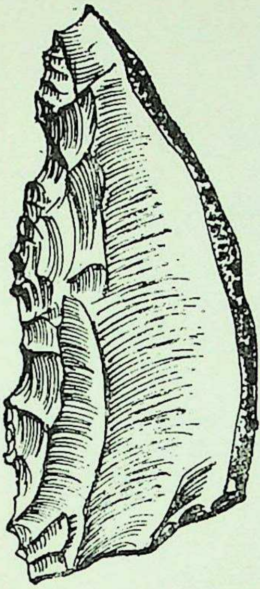


Fig. 3.7. A finely finished chopper

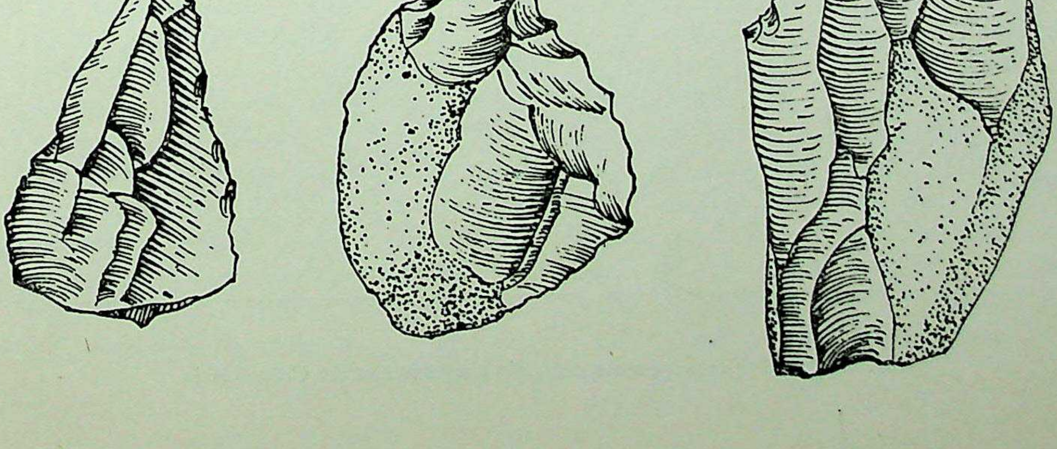
The Lower Palaeolithic of Soviet Central Asia is, therefore, fairly well documented. But it has yet to be established that the Chopper-Chopping complex represents an entity by itself, absolutely unassociated with the Acheulean and Levalloisean complexes since in southern Kazakhstan and northern Uzbekistan, where their settlements have been found concentrated, they are found mixed, albeit only in surface collections. As a corollary to it, it must be stated that in Soviet Central Asia the handaxe industry has been very feeble indeed, and that too without cleavers so far.

All this discussion only goes to suggest that much more field-work in areas beyond southern Tadjikistan is urgently called for.



THE MIDDLE PALAEOLITHIC

S.4.1 ↑
S.4.2→



S.4.1=Mousterian flake scraper from Ogzi-Kichik, south Tadjikistan
S.4.2=Mousterian flake point from Ogzi-Kichik, south Tadjikistan
Mousterian Pebble Chopper from Kara Bura, south Tadjikistan
Middle Palaeolithic core blade-flakes from GeorgievskyBugor, Uzbekistan

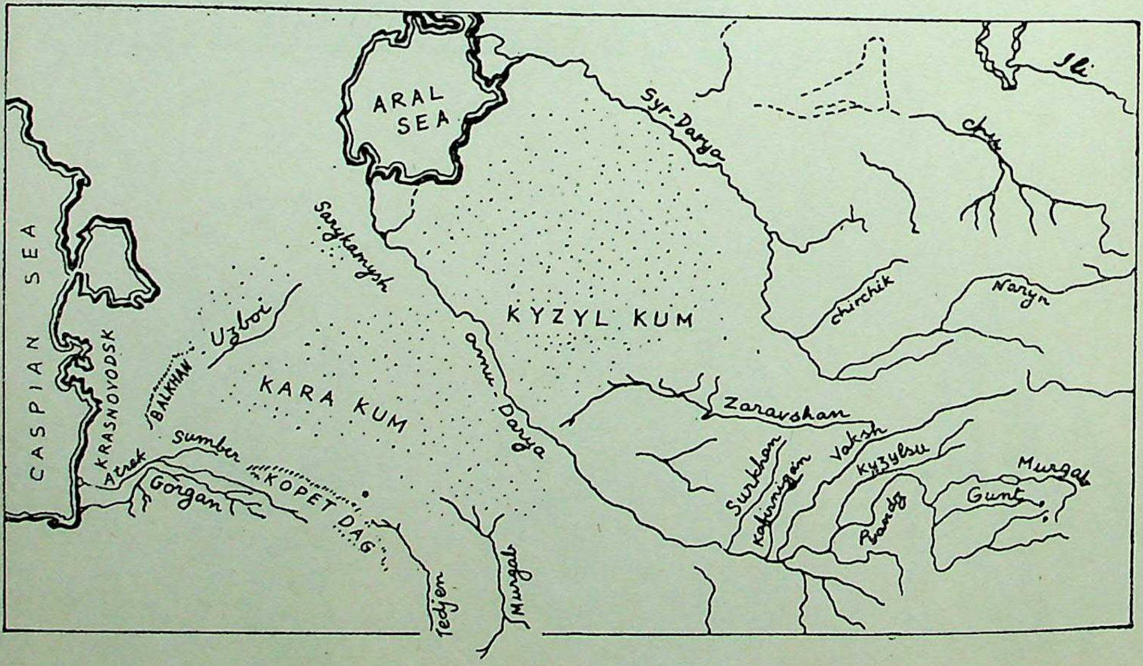

ARAL SEA
CASPIAN SEA
Syr-Darya
Ili
Chu
Sarykamysh
KYZYL KUM
Chirchik
Naryn
Uzboi
KRASNOVODSK
BALKHAN
KARA KUM
Amu-Darya
Zaravshan
Sumber
Atrek
KOPET DAG
Gorgan
Surkhan
Kafirnigan
Vaksh
Kyzylsu
Murgab
Gunt
Pyandj
Tedjen
Murgab

Fig. S.4.3a. Map showing some mountain ranges in Eastern Central Asia

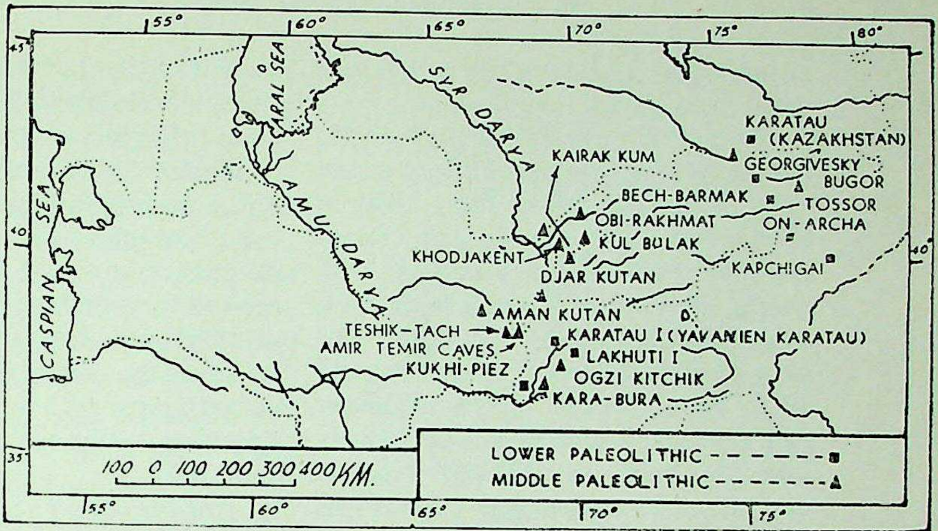

55°
60°
65°
70°
75°
80°
45°
40°
35°
ARAL SEA
CASPIAN SEA
SYR DARYA
AMU DARYA
KARATAU (KAZAKHSTAN)
GEORGIVESKY
BUGOR
KAIRAK KUM
BECH-BARMAK
TOSSOR
OBI-RAKHMAT
ON-ARCHA
KUL BULAK
KHODJAKENT
KAPCHIGAI
DJAR KUTAN
AMAN KUTAN
TESHIK-TACH
KARATAU I (YAVANIEN KARATAU)
AMIR TEMIR CAVES
LAKHUTI I
KUKHI-PIEZ
OGZI KITCHIK
KARA-BURA
100 0 100 200 300 400 KM.
LOWER PALEOLITHIC
MIDDLE PALEOLITHIC

Fig. S.4.3. Map showing important Palaeolithic sites

IN CONTRAST to the Lower Palaeolithic, the Middle Palaeolithic is very well defined (along with the tools, habitational remains and bones of men and animals are found) and best documented (there are some 103 sites) stage of the Palaeolithic period of Soviet Central Asia. Since in most of the cases the deposits of this culture have been found in well-stratified open-air and cave sites, our knowledge of this culture rests on sufficiently solid grounds. Possibly much more important evidence regarding it comes in the form of the skeletal remains of the actual users of the tools. Thus, as in Europe, we have not been digging only the Middle Palaeolithic tools but also the men who made them.

As said in the earlier chapter, the discovery of this culture-complex goes back to 1938 when A.P. Okladnikov, along with his artist wife V.D. Zaporozhakaya, discovered the famous prehistoric cave of Teshik-Tash (etymologically, 'stone with a hole') and excavated it with unique distinction. The site lies near the Soviet-Afghan border, within the gorge of the Gissar (or Hissar) ranges (locally known as Baisun-Tau) of the Pamir-Alai mountains. Along the foot of these ranges runs the sun-scorched, half-desert valley of the Sharabad Darya, also known as Turang Darya amongst the local people. It is now one of the driest and hotest places in the Soviet Union. Here one can easily find many natural caves, each given a separate name by the local inhabitants.

To be exact, the Teshik-Tash grotto lies in the Zautolosh Darya gorge, very high up—more than 1500 m above the level of the Turgan Darya. Here the gorge is like a canyon, with overhanging walls. It is not more than 20 m wide and 40 to 45 m high. The cave itself is, however, 20 m deep and 19 m wide, with a height of about 9 m. Since the region became extremely dry long back no one disturbed its deposit by re-occupying it. Once it was deserted in the prehistoric times, it remained like that till archaeologists dug it. The cave is located in the south-western Uzbekistan.

The cultural deposit is about 1·5 m thick, divided into five levels, on the basis of layers of desertion after every occupation. Culturally, however, the entire deposit belonged to one and the same complex—the Mousterian. The occupants squatted on the floors and cooked food on hearths of stones, one of which has been found at the entrance of the cave itself. The common material used for the tools is quartzitic limestone, although flintly limestone with dark grey streaks, quartz and a kind of jaspery stone, all found locally, were also extensively used. The tool types (Fig. 4.1) include triangular, oblong, oval and almost almond shaped scrapers with fine step-retouch;

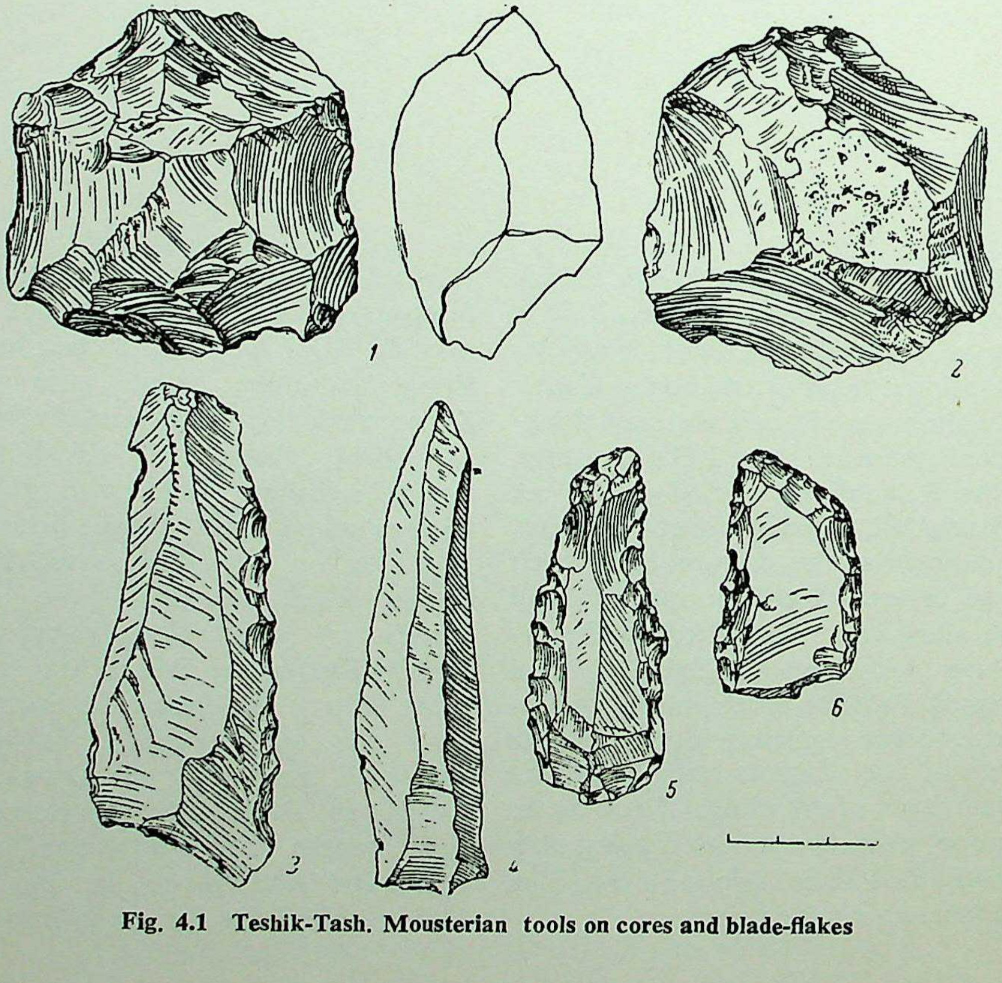


Fig. 4.1 Teshik-Tash. Mousterian tools on cores and blade-flakes

characteristic of the Mousterian tools. Similarly, there are typical disc-shaped cores. Some pointed triangular tools are concave along one side and convex on the other. Although, as a rule, bone tools were not made here, split bones were used as anvil as the parallel running cut-marks on them clearly show : on these bone pieces lithic flakes were used as knives.

The analysis of animal bones shows that the hunters preferred to kill Siberian mountain goats for their food. However, bones of the horse, deer, bear, leopard, hare and small rodents and birds have also been found in the debris of the kitchen. It is significant to note that the composition of the fauna is the same as it is found today in the regions of the same altitude in this part of the world.

The same is true of the flora. Juniper which grows here today has been found in charred condition in the ash of the camp-fires of the Mousterian men. It may suggest that the Middle Palaeolithic people lived here during the interpluvial or interglacial times of the last few stages of the Pleistocene period.

Within the habitational deposit was found the skull and a few long bones of an eight to nine years old boy. They were kept inside a shallow pit demarcated by the horns of the mountain goats planted on the ground (Fig. 4.2). It was, therefore, a regular burial. The special care given to the burial and the special favour shown to the Siberian goat, whose horns were used in fencing the grave, seem to be important factors. The former shows that certain rituals were observed during the actual burial of the dead body, while the latter shows that some totemic concept was attached to the animal whose horns were used in creating a barricade round the grave-pit. In this connection it has already been mentioned that the analysis of the animal bones from the habitational deposits show that mountain goat was possibly 'the basic and almost exclusive animal hunted by the Teshik-Tash community.' It may further be noted that it 'has its analogy in the bear cult which loomed large in the European Mousterian' (Movius 1953).

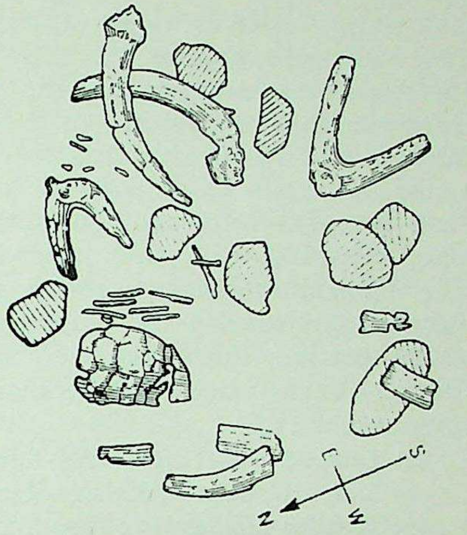


Fig. 4.2. **Burial of a Neanderthal boy at Teshik-Tash, Uzbekistan; sorrounded by goat frontlets**

The discovery of the Teshik-Tash cave was a turning point in the Middle Palaeolithic studies of Central Asia since it was followed by three decades of extensive explorations and intensive excavations of the Mousterian sites. It is significant to note that by 1970 as many as seventy eight sites were located—13 in Turkmenia, 34 in Uzbekistan, 21 in Tadjikistan and 10 in Kirgizia. Since then many more sites have been located. They include cave sites, as well as open-air (camp) sites, including sites near the ancient quarries. These researches have shown that while some of the sites may have belonged to the pre-Teshik Tash period others belonged to the post-Teshik Tash period. Not only that, there were, according to Ranov, at least four different tool-making traditions (in larger part, running simultaneously) which went into the make-up of the Central Asian Middle Palaeolithic culture-complex.

(*a*) *Levallois* : type sites—Obi-Rahmat, Djar-Kutan, Khodja-Kent
(*b*) *Levallois-Mousterian* : type sites —Kapchigai, Tossor, Fergana sites, and Kairak-Kum
(*c*) *Mousterian* or *Alpine Mousterian* : type sites—Teshik-Tash, Semiganj, Ogzi-Kichik
(*d*) *Moustero-Soanian* : type sites—Kara-Bura, Ak-Djar, Kuhi-Pies.

Scholars like R. Kh. Suleimanov (1965 and 1968) have, however, some genuine doubts regarding this classification, at least in regard to the first two groups. They feel that since the Levalloisean flakes at most of the sites, included, in these groups, *e.g.*, the cave site of Obi-Rahmat, do not account for more than 30% of the tools, we are not justified in using a term which Prof. Borde coined specifically for those collections in Europe which include Levalloisean flakes for more than 50% to 60%. According to them, the material from Teshik-Tash, Khodja-Kent and Obi-Rahmat, Kairak-Kum and South Fergana from part of one local facies, which may be called Obi-Rahmat, 'with Teshik-Tash at the top and Obi-Rahmat at the bottom of the chronological scale'. But 'a number of sites in the middle course of the River Zeravshan, which demonstrate the genuine Levallois technique, and the village of Kul-Bulak near Tashkent are outside the mainstream of this culture.' M.R. Kasymov calls it 'a distinct group' and designates it as 'Perforated'. The Levallois technique is also typical of some sites on the Mangishlak peninsula.

Ranov in 1971 (210-232) again made a detailed study of the Mousterian collections from the following sites :

(*i*) Teshik-Tash (Okladnikov 1949)
(*ii*) Khodja-Kent (Okladnikov 1961: Nasritdinov 1962)
(*iii*) Kara-Bura (Ranov 1965)
(*iv*) Kapchigai (Kasimov 1962)
(*v*) Djar-Kutan (Ranov 1965)
(*vi*) Kairak-Kum (Okladnikov and Ranov 1962)
(*vii*) Tossor (Ranov 1965)
(*viii*) Sari-Kurgan (Kasimov 1965)

In 1975 Ranov excavated the rock-shelter of Ogzi-Kichik and made a detailed study of the material. He has once again come to the conclusion, on the basis of the variety of tools and their percentage in each collection, that there is a Levalloisean—Mousterian facies as distinct as the Mousterian-Soanian facies. In 1976 he published a short report of detailed attributive analysis of six Mousterian assemblages which confirmed his earlier conclusions.

But without going further into the details, it will be worthwhile to know a little more about a few individual sites.

We may start with a cave, located very near Teshik-Tash, which also belongs to the Alpine group. It is known as Amir-Temir. The explorations conducted here yielded comparatively a small collection of disk-shaped cores, triangular and oblong scrapers with thickend bottoms, and points of several kinds. The animal bones accounted for a large number of mountain goats, as it was at Teshik-Tash. Since the deposit in this cave is thin, it has been suggested that the grotto was only occasionally occupied.

Belonging to the LEVALLOISEAN-MOUSTERIAN GROUP of Ranov are the important sites of Djar-Kutan (300 tools) and Semiganj (250 tools), both in Tadjikistan. It is, therefore, clear that this culture-complex was not confined to the central part of the Syr Darya system. As this was true of the Levalloisean-Mousterian, it was also true of the Alpine Mousterian. At Aman-Kutan cave, about 43 km south of Samarkand, discoidal cores, scrapers and points of the Teshik-Tash type have been found. But the culture as a whole seems to differ from the Teshik-Tash in at least one respect—the mountain goats did not figure in the list of the hunted games. Instead, a large number of sheep bones were found which have been indentified as belonging to 116 individual animals. In addition, bones of deer, roe and onager were found among the skeletal remains located in this cave, including the bones of 39 brown bears. Turtle held a prominent place in the diet of the Aman-Kutan inhabitants.

Returning to the Levalloisean-Mousterian facies, it may be recalled that Ranov distinguished two basic

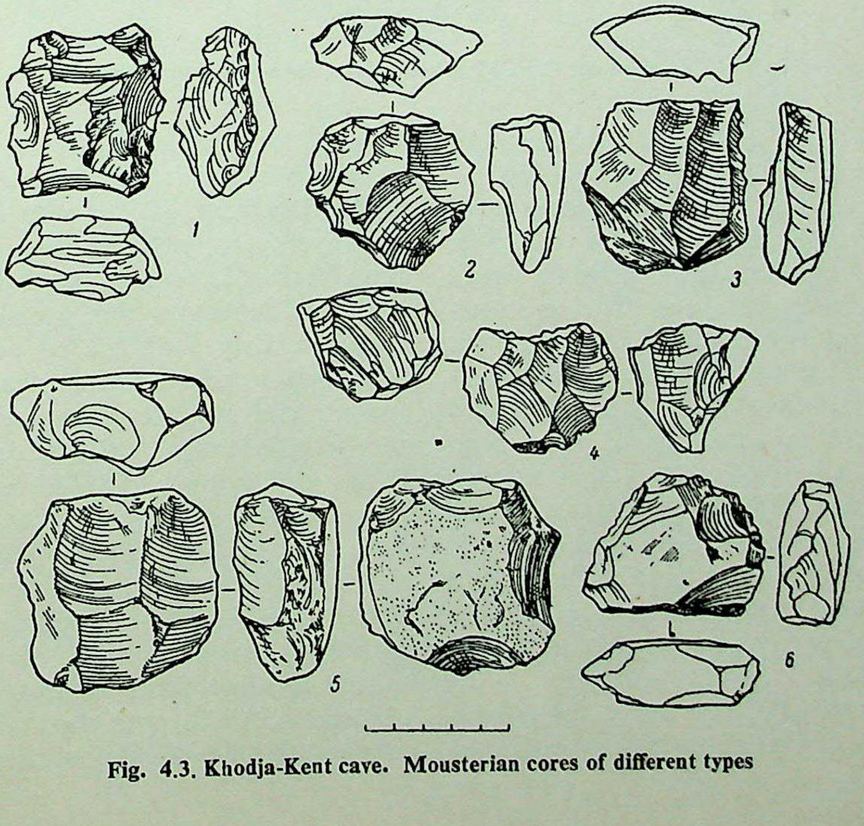


Fig. 4.3. Khodja-Kent cave. Mousterian cores of different types

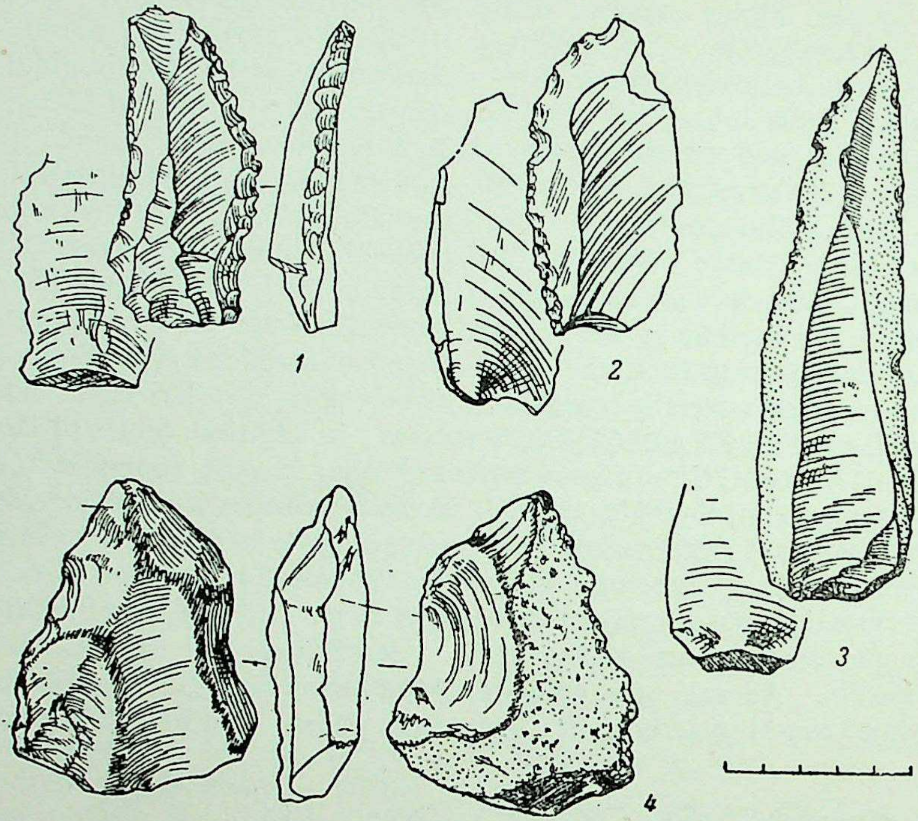


Fig. 4.4. Khodja-Kent Cave. Mousterian flake, flake-blade and core tools

tool-making techniques : (a) Levalloisean, and (b) Levallois-Mousterian.

On the north-east of Tashkent flows the river Chirchic. Along the river there are mountainous spurs in which are located several caves with mousterian deposits. Of these, the prominent ones are Khodja-Kent I and Khodja-Kent II where 'camp-fire ashes and bones of mountain goat' have been found. As regards the tools, it may be mentioned, that along with the typical mousterian scrapers, discoids (Fig. 4.3) and points, long flint-blades and a very large pointed flake-tool of the Levalloisean types have been found (Fig. 4.4).

But possibly the most representative site of this group is the cave of Obi-Rahmat, located about 100 km north-east of Tashkent. It has a huge deposit, about 10 m thick, divided into twenty-one layers and yielding about 30,000 tools. It took several years to excavate it. The results are spectacular—it gave a fairly long list of animals, some eleven generas, the inhabitants hunted, and it gave a long evolutionary series of tools they made on flint. Thus, the games included Siberian goat, deer and sheep, as well as porcupine, bear and cave-lion. The tools start with (from the lowest levels upwards) Teshik-Tash type discoidal cores (very few in number, of course) as well as some scrapers and points. It is significant to note that with the passage of time, the disc-shaped cores are replaced by proto-prismatic and prismatic cores, indicative of the emergence of the Levalloisean technique of flake production. The tools are also now flake-blade based, such as long knives and points. As the time moves on, they become large blades with retouched distal ends. At the same time short and broad scrapers of the earlier period started disappearing. It has been observed that these blade-tools were 'similar to some of the better known Near Eastern industries of pre-Aurignacian-Amdien type'. Further, that 'it is quite possible that the later deposits of Obi-Rahmat were among the oldest Upper Palaeolithic assemblages of Western Central Asia.' (Suleimanov 1968)

Besides these cave sites, there are open-air sites of the Levalloisean-Mousterian facies (Fig. 4.5). Thus,

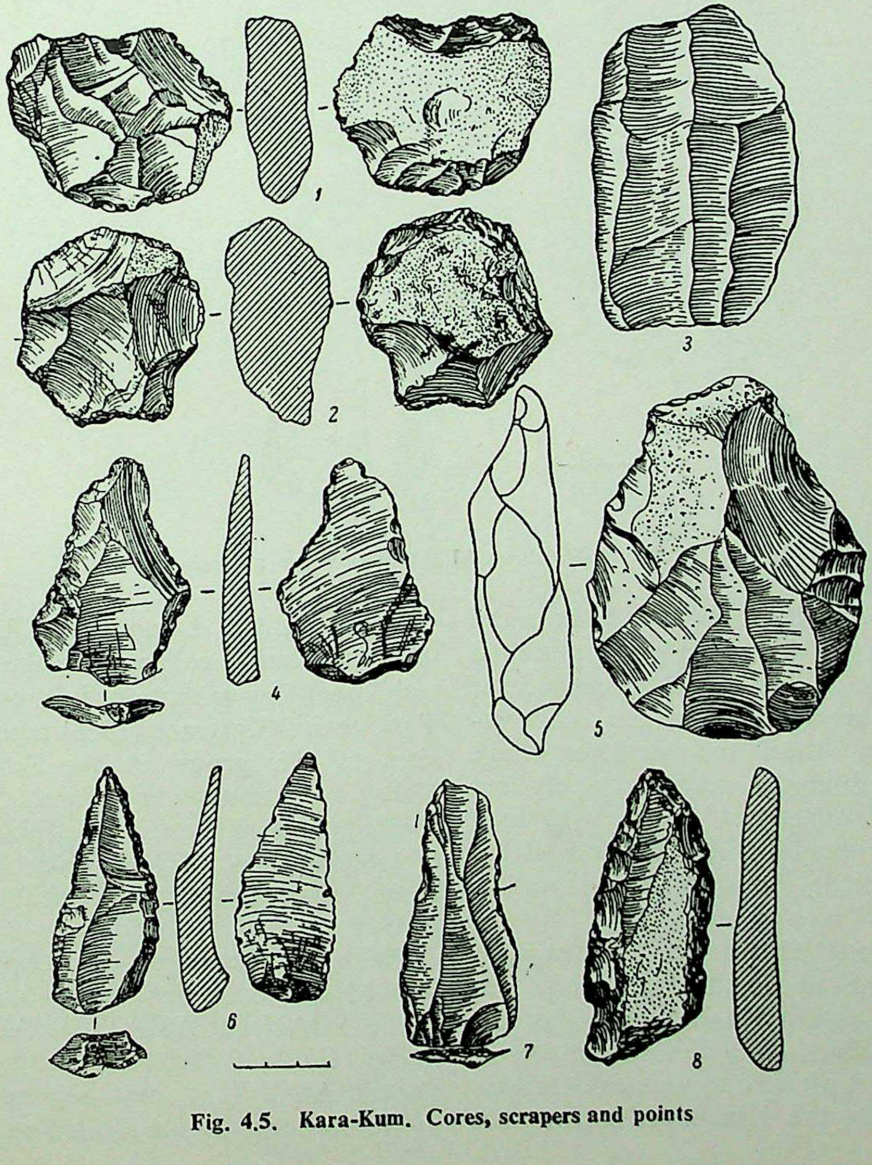


Fig. 4.5. Kara-Kum. Cores, scrapers and points

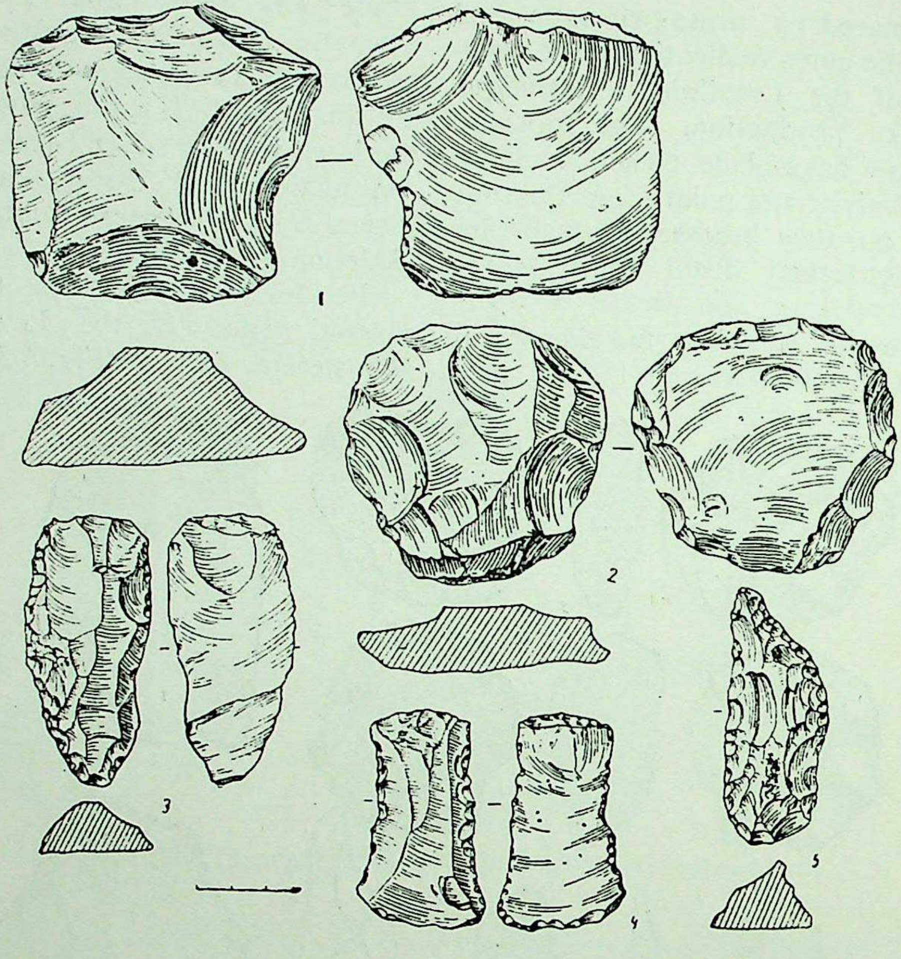


Fig. 4.6. Kairak Kum. Mousterian scrapers and points

at Kairak-Kum, on the bank of the Syr Darya, located between Leninabad and Naukat, there is a succession of ancient terraces, now largely obliterated. On them the explorers have found discoidal cores, scrapers and points, sometimes mixed with long narrow blades (Fig. 4.6), reminiscent of the blades from the upper layers of Teshik-Tash.

Material of this group has also been picked up on the eastern shores of the Caspian Sea, but only sporadically. Thus, Okladnikov made a collection of such tools near Kaskir Bulak in the Krasnovodsk peninsula of Turkmenia. Luzgin and Ranov made a similar collection in the central Kopet-Dag mountains in southern Turkmenia. Kasymov (1966) reported sites of this group in the Fergana Valley. Okladnikov and Ranov also located them in western Tadjikistan. Obviously, this Middle Palaeolithic facies had an almost pan-Central Asia character.

With this account of the Levailoisean-Mousterian facies, we now pass on to the SOAN (or ASIATIC) FACIES of the Middle Palaeolithic Cultures of Central Asia. It is best represented at Kara-Bura, a site located on the

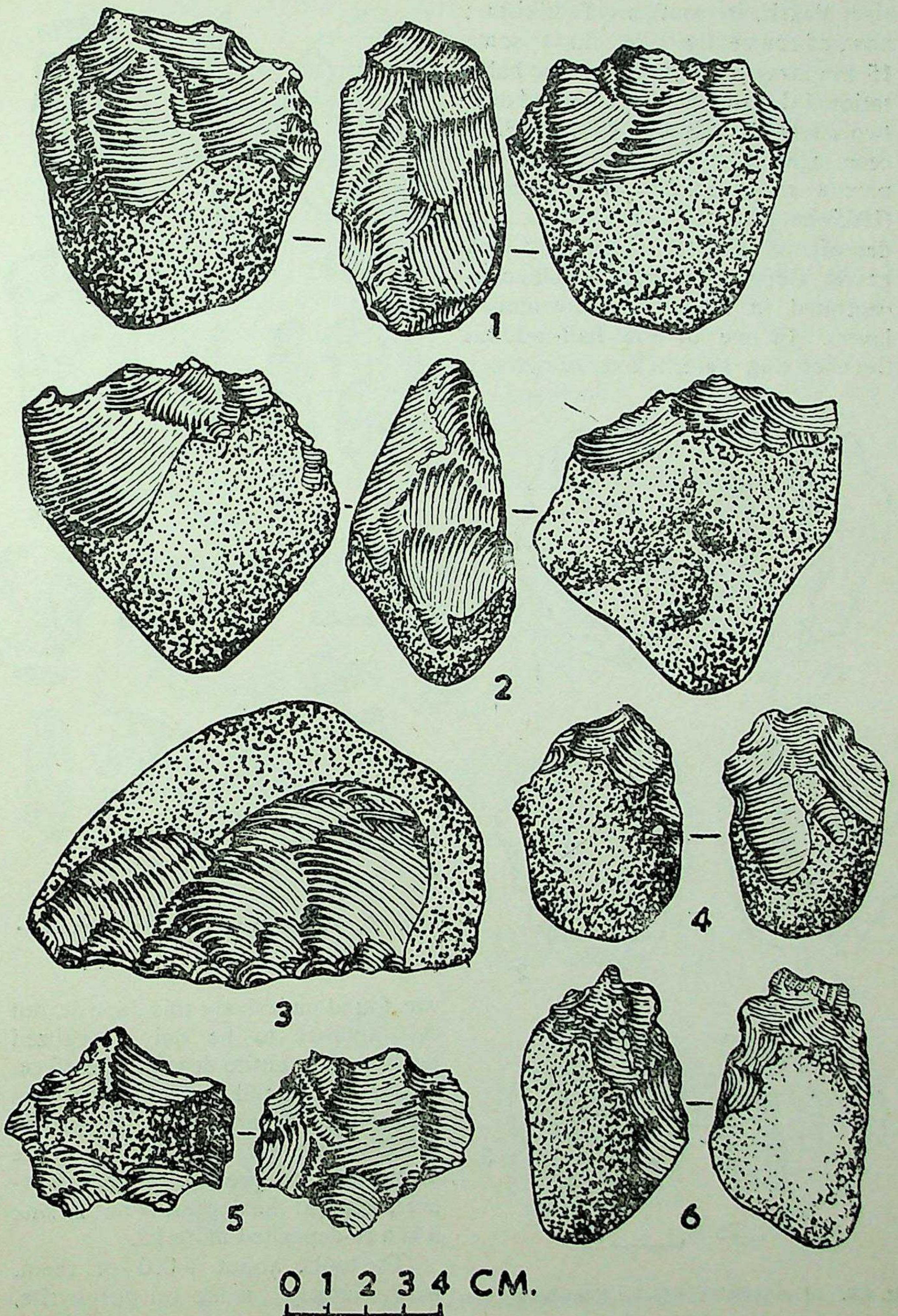

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Fig. 4.7. Middle Palaeolithic pebble tools from Kara-Bura

river Vaksh, in southern Tadjikistan; now, of course, the river flows some 15 km away from the site. The habitational deposits have been found over two sandy mounds of the Late Pliocene age, now separated by a very narrow nala. Excavations by Ranov (1965) have revealed more than 2 m deposit of alluvial sand, clay and gravel along with small pebbles concentrated in lenses and dove-tailed layers. In one of the half-a-dozen trenches dug here, a layer of red clay was found underlying this deposit, but this appears to be only a localized pocket. The entire deposit, therefore, belongs to one and the same geological formation. Archaeology also proves it. On personal observation of the actual site, the present writer, however, felt that the deposit is not *in situ*; it is a re-deposited material.

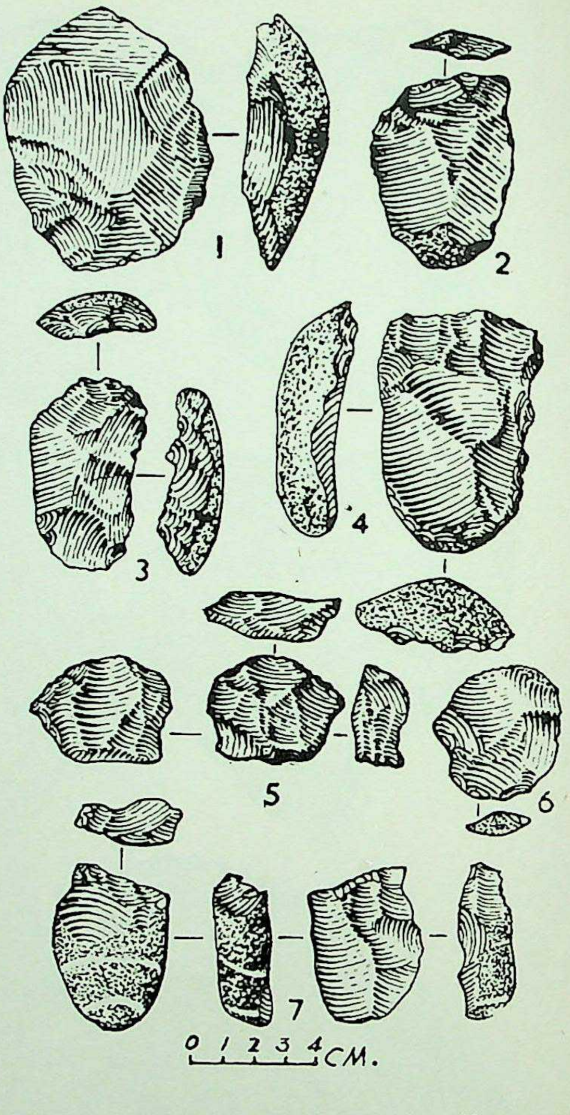

Fig. 4.9. Middle Palaeolithic tools from Kara-Bura

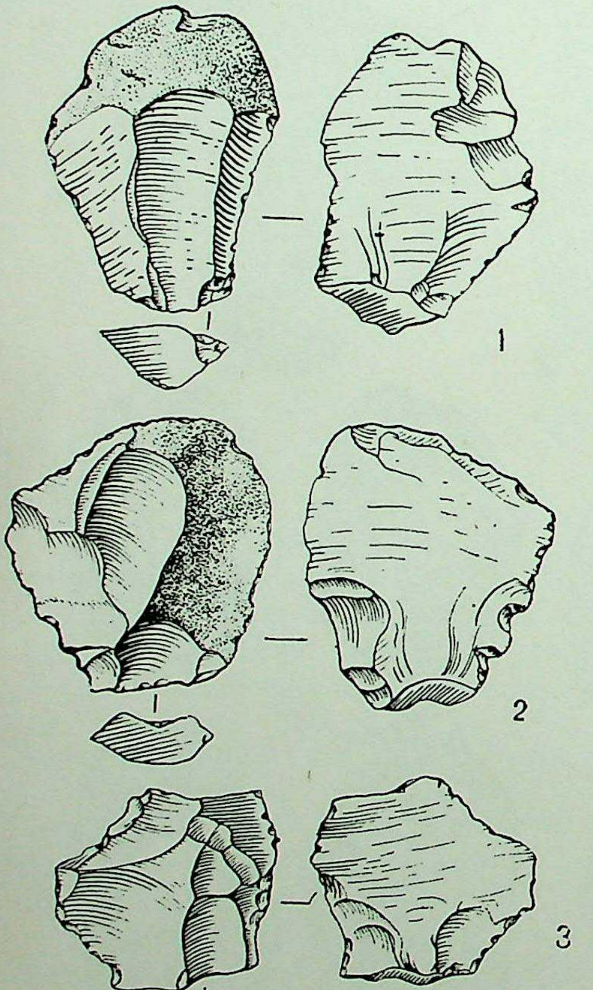

Fig. 4.8. Mousterian flake tools : Kara-Bura

The tools, about 8,000 of them, were largely made on porphyrite, although occasionally flint and quartzite were also used. A large number of tools were made on pebbles and nodules (Fig. 4.7), ocasionally split transversally, sometimes also longitudinally. Sometimes, thick primary flakes were also used (Fig. 4.8). The tool-types include retouched flakes, regular and irregular scrapers, plain flake-blades (Fig. 4.10), chopper-chopping artefacts and a small percentage of points and blades (Fig. 4.9). Besides these, a large number of cores also occur in this collection. They are unifacial and bifacial discoids as also cylindrical (unipolar and bipolar, as also multi-sided) and conical forms on pebbles. The presence of small-sized pebble chopper-chopping tools (Fig. 4.11) makes Ranov believe that it is comparable with the Middle Soan B industry of the Indo-Pakistan subcontinent (discussed in detail later in chapter 7).

In the Middle Palaeolithic group fall the mixed collections (not Mousterian-Soan) from a number of sites located in Tadjikistan. They are, according to Ranov, Ak-Sukon, Khoja-Yagona, Shor-Kul, Khodja-Gor, Djar-Kutan, Margidav, Khorangon, Tul-Kaul, Gufidabad, and Arad; Ak-Djar is, however, having tools of the Mousterian Soanian variant.

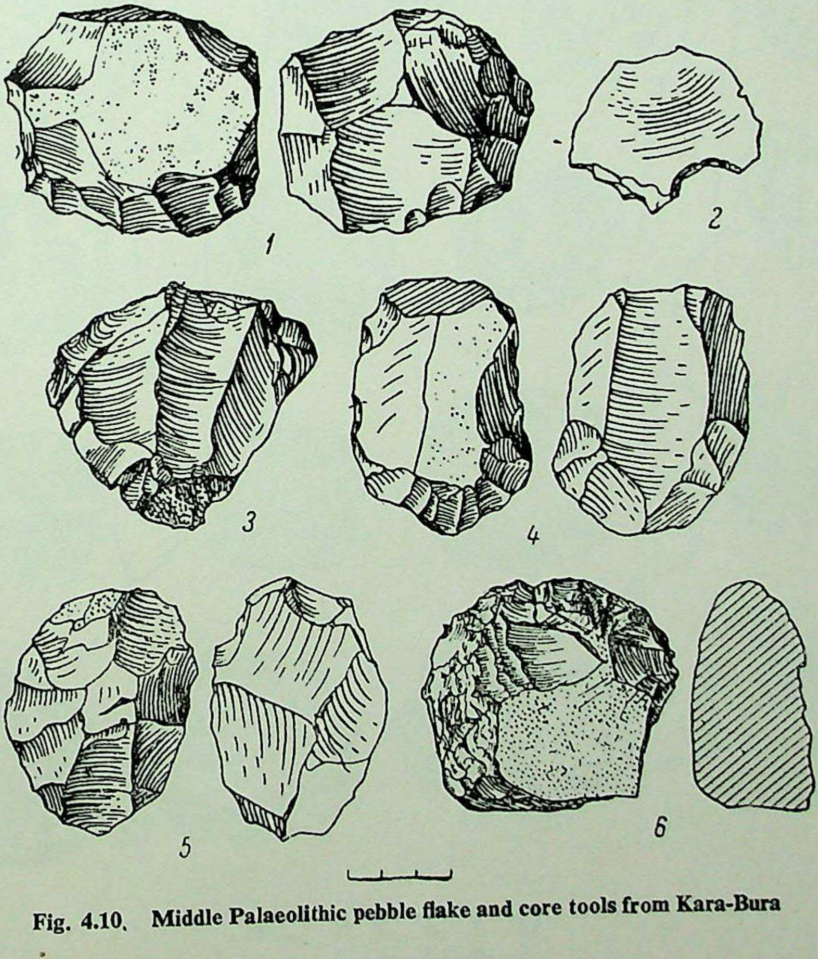

Fig. 4.10. **Middle Palaeolithic pebble flake and core tools from Kara-Bura**

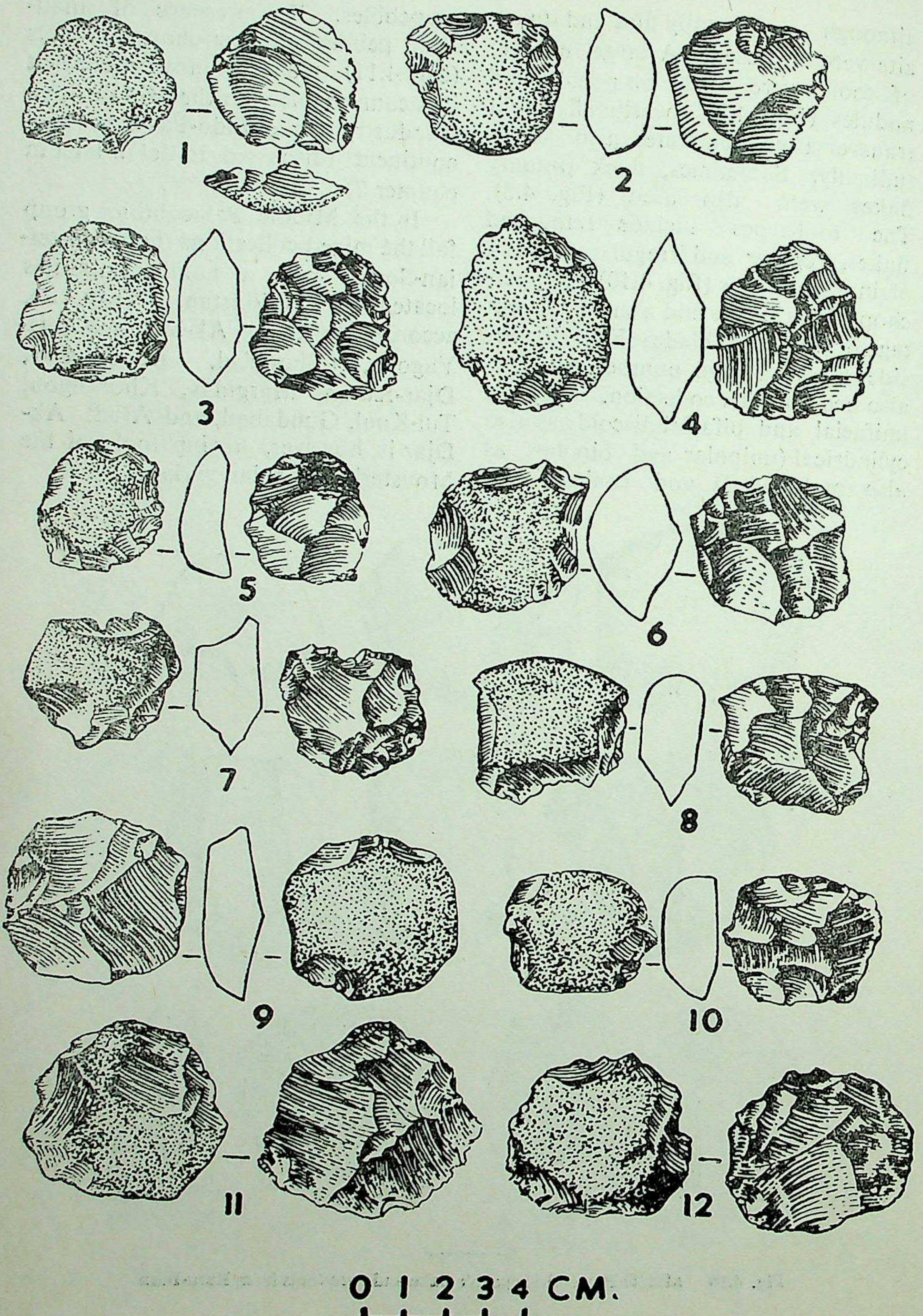
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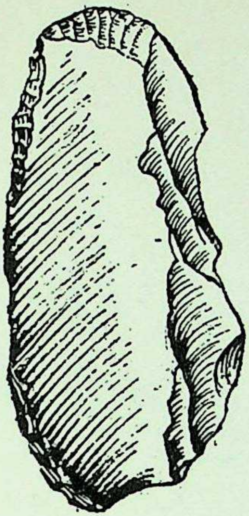
Fig. 4.11. Kapchigai. Mousterian cores on small pebbles

Soviet archaeologists worked in another direction also. They tried to locate the quarries of the Mousterian times. Two of them—Uchtut and Idjont—are found situated on the spurs of the Karatau mountains, in the middle course of the Syr Darya. There are two more—Okhna and Kapchigai are located near the town of Fergana. According to the explorers, at Kapchigai, the flint was quarried directly from the cliffs of the hills and the tools used for mining and shaping the implements were made from large fragments of the same flint. The discovery of finished tools of these sites indicates that they were made here itself. By its side, the tributory of a river was once flowing.

The above details of the Middle Palaeolithic of Central Asia make it clear that it was not only a wide-spread culture but there was also an underlying uniformity in the different facies of this culture. Further, the trend in the tool-kit was towards specialization—there are about sixty types of tools when considered in the light of Bordes' classification—as also towards the production of long flake-blades. Both these features marked the next cultural stage of Central Asia, the Upper Palaeolithic.



THE UPPER PALAEOLITHIC

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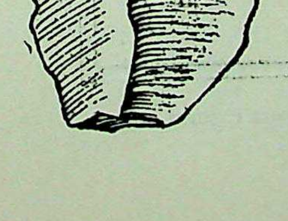
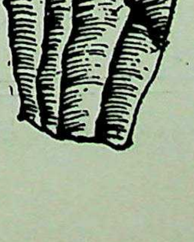
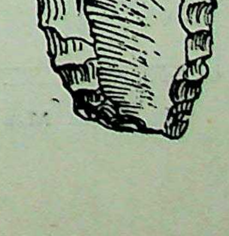


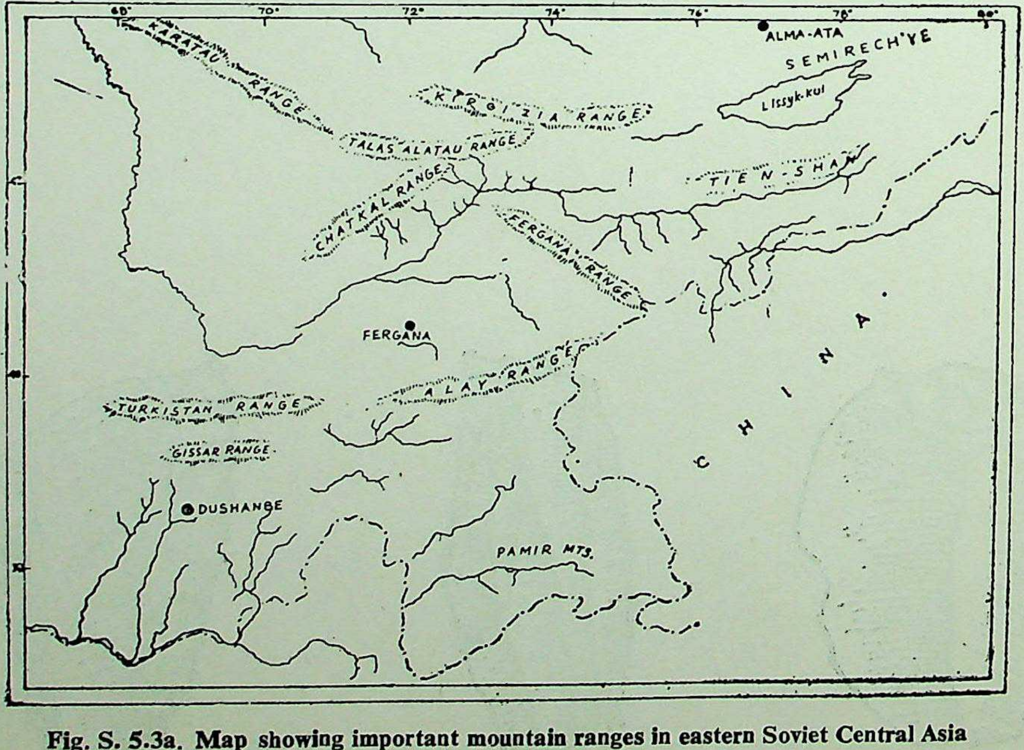




S.5.1=End-cum-side scraper fram Shougnou, south Tadjikistan.
S.5.2=End scraper from Shougnou, south Tadjikistan

Blade core from Shougnou, south Tadjikistan

Double-side scraper from Samarkand, Uzbekistan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ALMA-ATA
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TIEN-SHAN
FERGANA RANGE
FERGANA
ALAY RANGE
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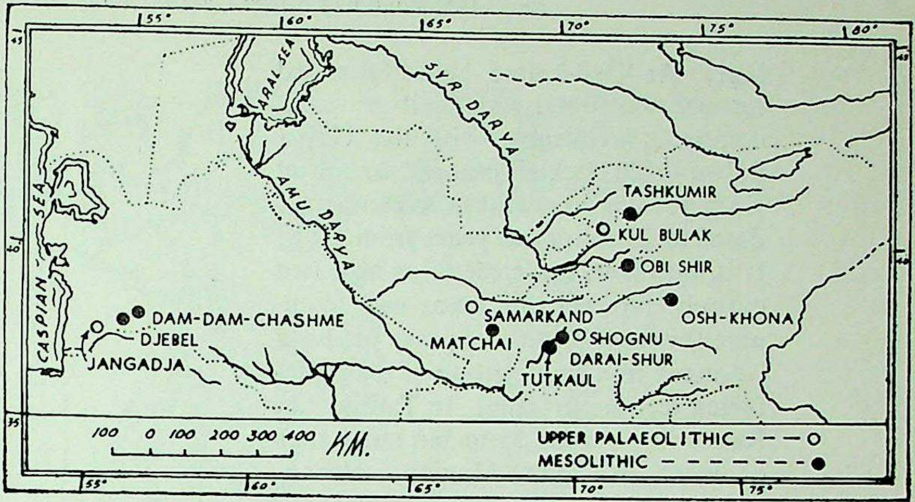
Fig. S. 5.3a. Map showing important mountain ranges in eastern Soviet Central Asia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SYR DARYA
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OBI SHIR
DAM-DAM-CHASHME
DJEBEL
JANGADJA
SAMARKAND
OSH-KHONA
SHOGNU
MATCHAI
DARAI-SHUR
TUTKAUL
100 0 100 200 300 400 KM.
UPPER PALAEOLITHIC ○
MESOLITHIC ●

Fig. S.5.3. Map showing important Upper Palaeolithic sites

THE UPPER Palaeolithic of Soviet Central Asia has not been as fully documented as the Middle Palaeolithic and Lower Palaeolithic. Nevertheless, whatever sites are known to us, they go a long way to establish its character. Of these, the outstanding sites are Samarkand in Uzbekistan, Shougnou in South Tadjikistan Khodja Gor in Kirgizia, and Yangadja in Turkmenia. A few other sites are only open-air stations.

Thus, as in the case of Lower Palaeolithic and Middle Palaeolithic, the region of Krasnovodsk on the Caspian Sea happens to be the westernmost site of the Upper Palaeolithic. Some 39 km from Krasnovodsk there is an open-air site where, in a restricted area, the blade tools have been found concentrated, a feature which indicates that it was a facrory site. The cores found here are largely prismatoid, although some of them have also been discoids which, possibly, served as the link with the earlier (Middle Palaeolithic) tradition. The blanks recovered are long blades showing controlled flaking. They were used in making different kinds of scrapers, piercers and knives. Some of the scrapers were, however, made on cores also.

In the valley of R. Vaksh also, in the south-eastern side of Central Asia, there is an Upper Palaeolithic assemblage. At Kisil-kala a beautiful nosed scraper was found which, it is said, compares favourably with the Upper Palaeolithic backed scrapers found at Kara Kamar in northern Afghanistan, dated to 25 thousand years from now. It is, however, not clear to us how two entirely different tool types can 'compare favourably' as such; may be, both belonged to a single group of manufacturing technique (only). In Tadjikistan Ranov has located some ten more sites of which Ak-Djar, Magian, Harangon, and Gachak are important.

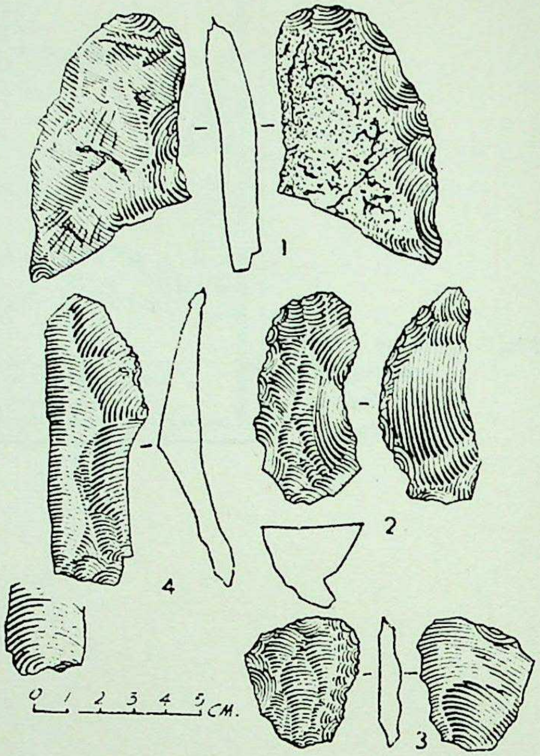

Fig. 5.2. Blade-flake tools from Samarkand Upper Palaeolithic

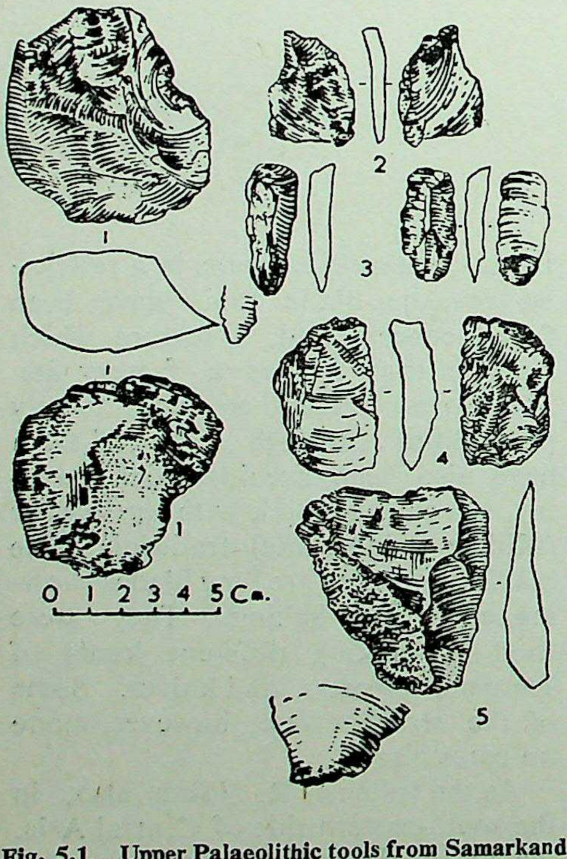

Fig. 5.1. Upper Palaeolithic tools from Samarkand

In the central part of Central Asia, the Middle Palaeolithic quarry sites of Kapchigai, Uchtut and Id-jont continued to be used by the Upper Palaeolithic people. It is borne out from the discovery of prismatic cores, large flakes and blade-scrapers at these sites. But this inference is based on only typological analysis of the surface collections. The real stratified evidence comes from another site. It is Kul Bulak, near Tashkent. The two upper levels of this site have yielded the evidence of the use of not only the typical Upper Palaeolithic tools but also of the remains of camp-fires. These remains overlie the Mousterian deposits.

But possibly the better studied site is Samarkand camp-site, located within a public park of the town. Each of the three cultural levels found here is very well preserved, although they are separated from each other by sterile layers. The discovery of camp-fires and concentration of tools in parti-

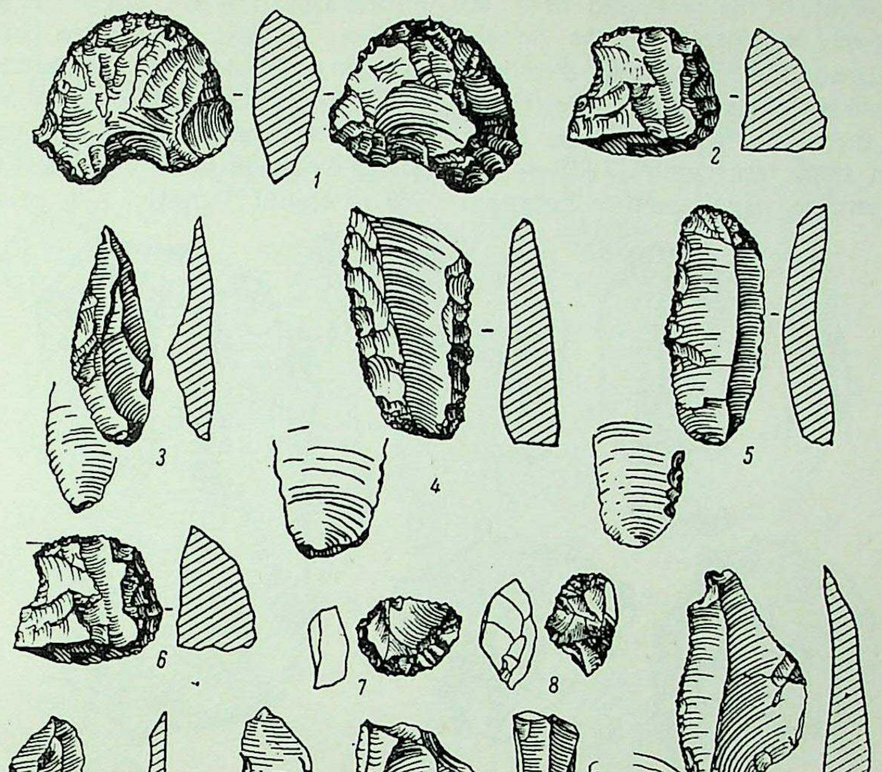
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Fig. 5.3. Upper Palaeolithic tools from Samarkand

cular places of the excavated area go a long way to suggest that the people established their temporary dwellings at a number of spots within a restricted area, and also fabricated their tools within these temporary dwellings. It is, however, significant to note that all the flint tools are not of the Aurignacian family, some are certainly archaic and show the continuance of the earlier tradition of the Middle Palaeolithic people. A large number of cores have been found, usually of the discoidal variety, but prismatic

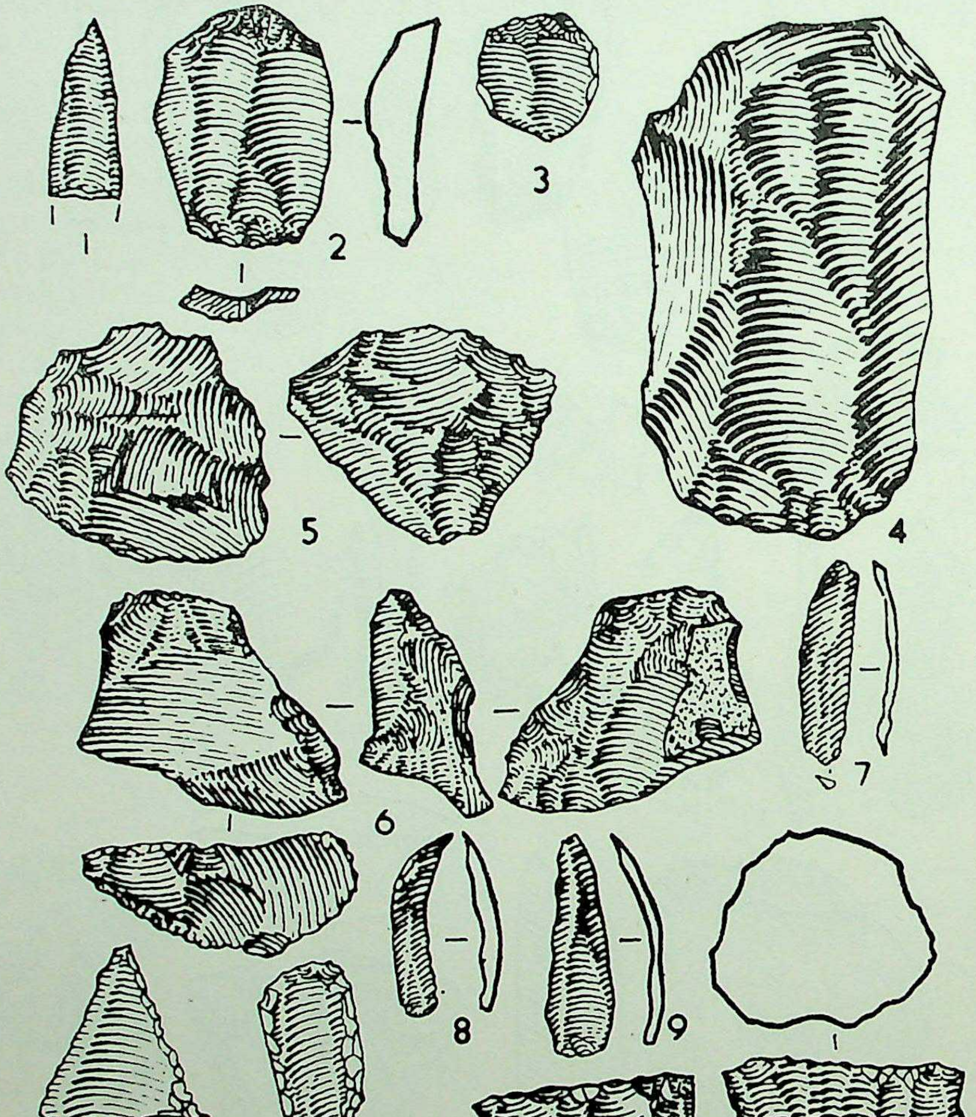

Fig. 5.4. Upper Palaeolithic Blade-tools from Shougnou, Level I, southern Tadjikistan

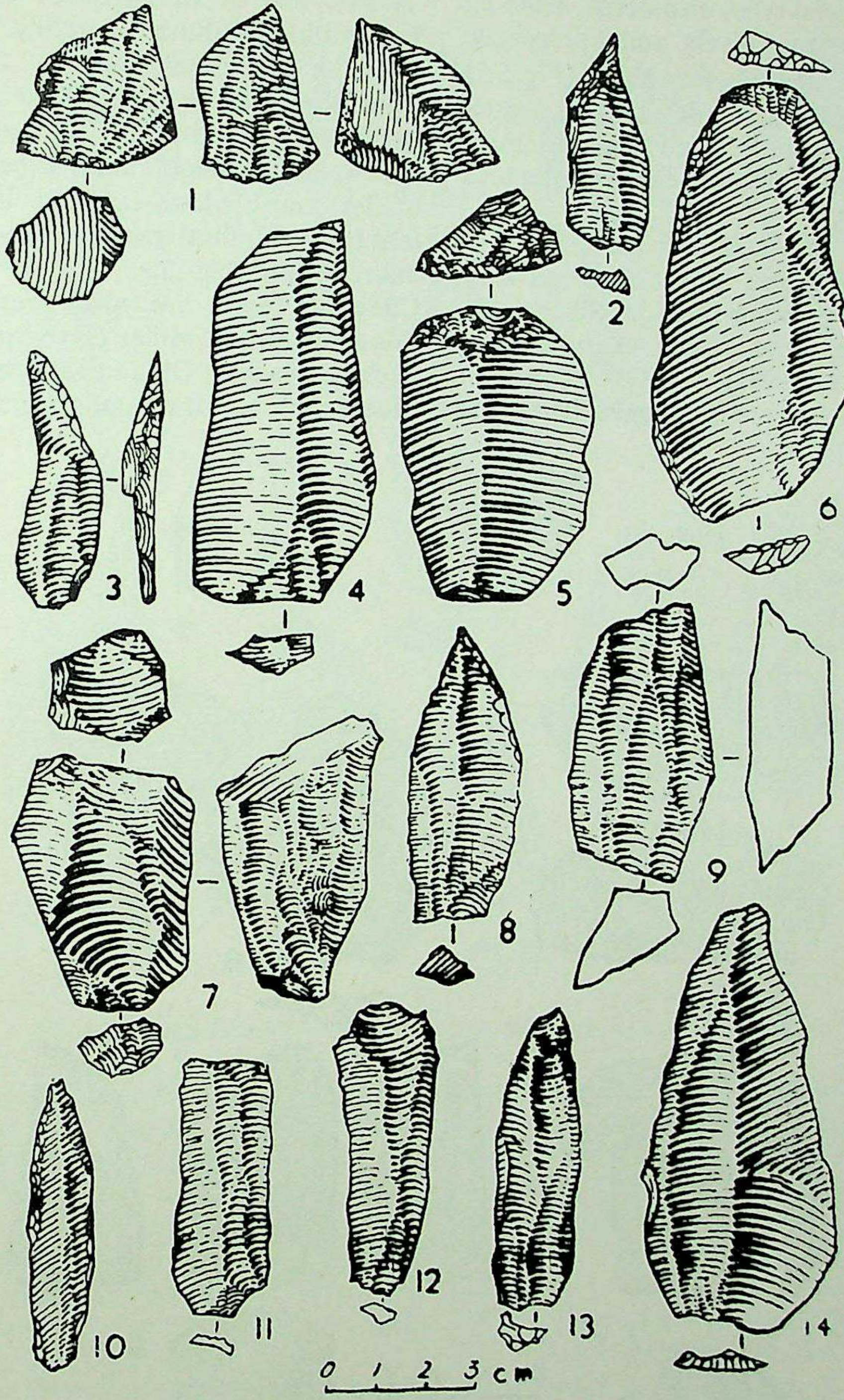
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Fig. 5.5. Upper Palaeolithic blade-tools from Shougnou, Level II, southern Tadjikistan

and bifacial types also occur, although in a comparatively small percentage (Fig. 5.1.). Points, thin blades (Fig. 5.2), thick notched blades, knives, pointed scrapers (Fig. 5.3) and roughly made chopping tools, etc., complete the tool-kit.

D.N. Lev (1965), the excavator, connects these sites of Samarkand with the camp-sites in Siberia, for example, the one excavated by Rudenko (1961) at Kst- Kanskara. Ranov, however, connects it with the 'Asiatic' line of development of the Palaeolithic culture, possibly Soan, since the Samarkand industry differs from the industries of the East Mediterranean stations; at Samarkand flakes and flake-tools outnumber the blades and blade-tools. It is important to note that rough core-tools, mainly on pebbles, *i.e.*, Choppers and Chopping tools, are also present in this assemblage, while there are no backed blades. Okladnikov, on the other hand, points out most pertinent-

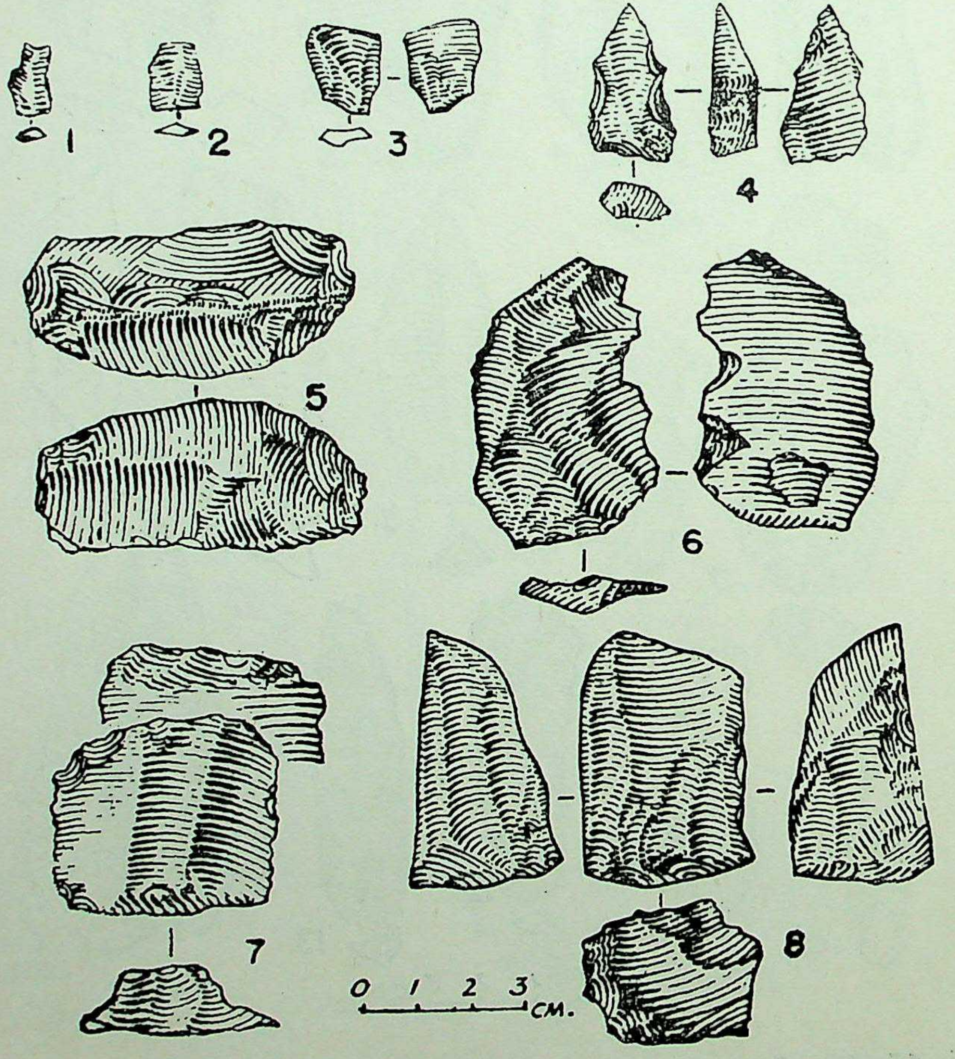


Fig. 5.6. Upper Palaeolithic blade tools from Shougnou, Level III, southern Tadjikistan

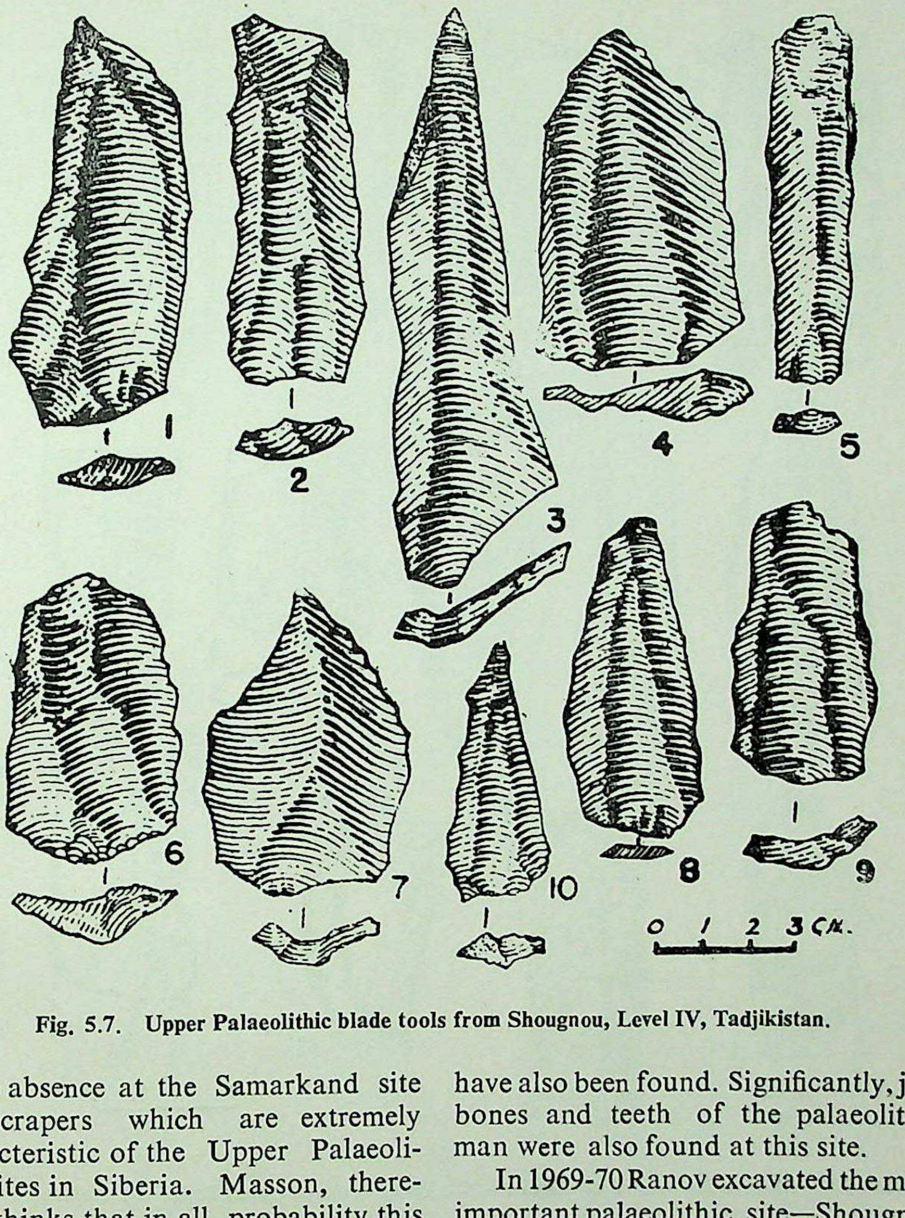


Fig. 5.7. Upper Palaeolithic blade tools from Shougnou, Level IV, Tadjikistan.

ly the absence at the Samarkand site of scrapers which are extremely characteristic of the Upper Palaeolithic sites in Siberia. Masson, therefore, thinks that in all probability this is "an assemblage of a rather unusual local Central Asian industry of 'non-Aurignacian' type." (Masson and Sarianidi 1972, 170).

The hunted animals whose bones have been found at Samarkand include wild horse, donkey, camel, aurochs bison, etc. Bones of sheep and saiga have also been found. Significantly, jaw bones and teeth of the palaeolithic man were also found at this site.

In 1969-70 Ranov excavated the most important palaeolithic site—Shougnou (Plate IV). It is located on the upper reaches of the river Yakshu, some 200 m above the sea level (Fig. 5.11). The cultural horizons here are confined to the mantle loesslike loam of the late Pleistocene 80 m terrace (Ranov 1973).

This is the first stratified Upper Palaeolithic site in Tadjikistan on an

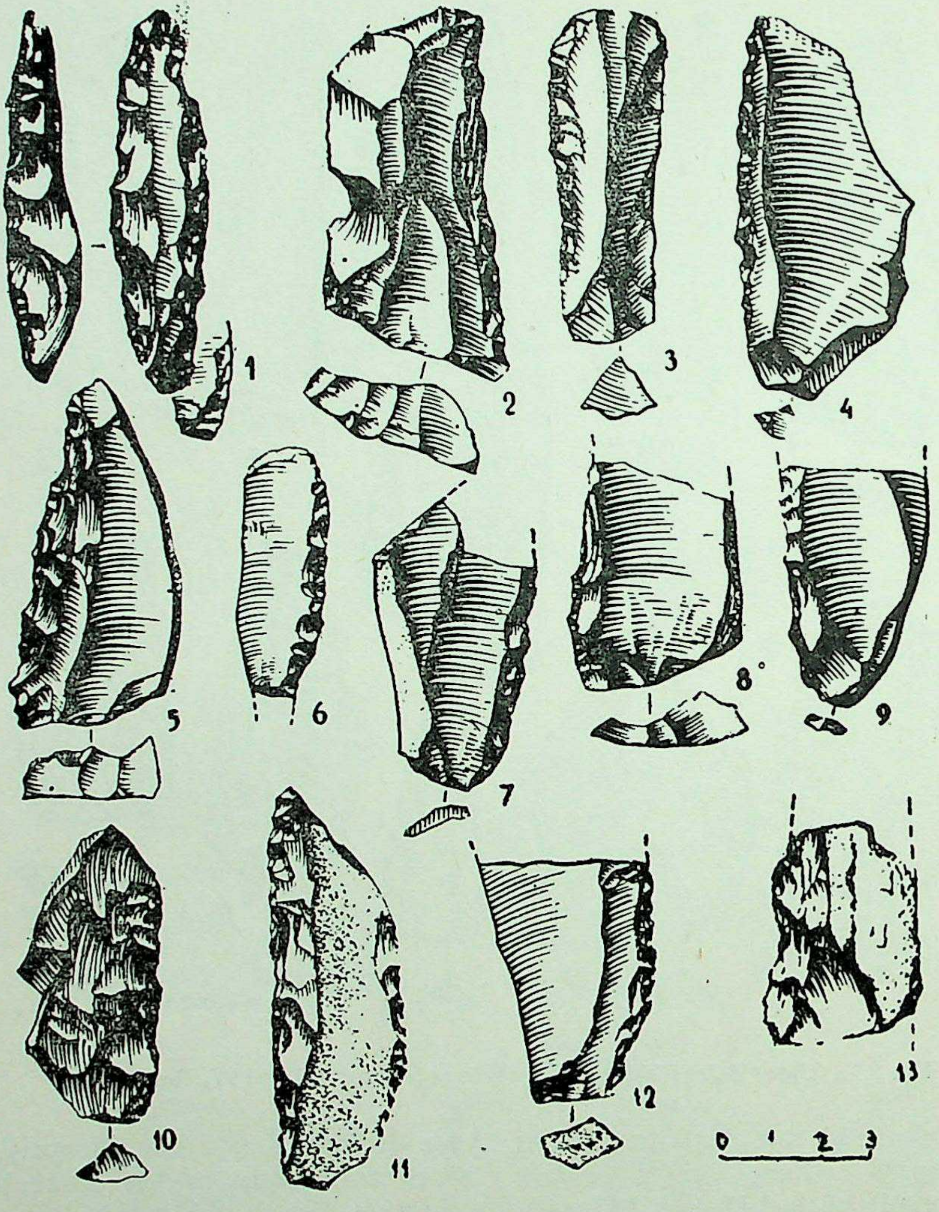


Fig. 5.8. Mousterian tools from Ogzi-Kichik. Trend towards Upper Palaeolithic blade-tools

Upper Pleistocene terrace. The excavations have shown four levels of occupation of which the upper-most is dated to the final stage of Upper Palaeolithic. It is characterized by thin sharply-curved blades, different kinds of scrapers and cores, and core tools. Thin blades, end-scrapers, including two-ended scrapers, round scrapers, and a series of small flint-points with straight or bent edges worked up with a blunt retouch are the major tool-types (Fig. 5.4 to 5.7). The level below it—the second level—is the richest in archaeological material where the chief form consists of different kinds of points. In the still lower levels—the third and fourth—which are dated to 30,000 to 25,000 years from now – Levalloisean forms predominate. Ranov, however, feels that even these levels belong to the Upper Palaeolithic which is, of course, polemic.

Between 1971 and 1975 the rock-shelter, located in front of the cave known as Ogzi-Kichik (Plate V) was excavated by Ranov. The site is located

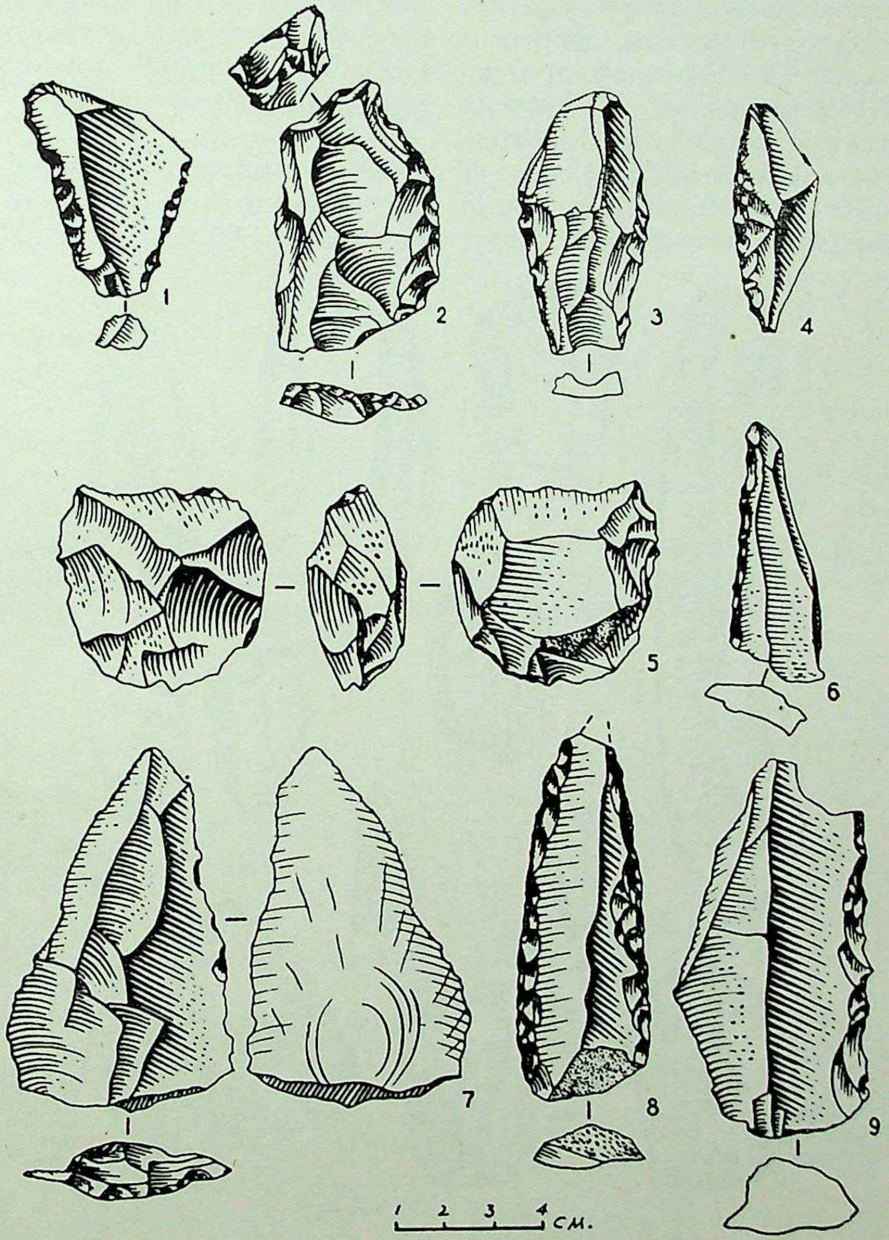


Fig. 5.9. Mousterian tools from Ogzi–Kichik. Trend towards Upper Palaeolithic tools

in a mountainous region, some 1200 m above Mean Sea Level, at a distance of 120 km south-east of Dushambe. The artifacts, etc., account for four metre deposit, geologically dated to the second-half of the Upper Pleistocene. The faunal remains, indeed very rich, include woolly rhinoceros, pleistocene ass, etc. The lithic industry of Ogzi-Kichik shows unmistakable elements of developed Levalloisean-Mousterian and, in a sense, should be grouped as such. However, it has also certain elements which may be called Upper Palaeolithic. The main types of tools include different kinds of scrapers and knives, as also spearheads, points (Fig. 5.8 and 5.9), limaces, etc., which, of course, occupy secondary position. It is significant to note that since suitable raw meterial was not available in the vicinity of the cave for making the tools, there is almost the total absence of typical Mousterian nuclei.

The period of transition to the Mesolithic has also been marked here which gave a ^{14}C date of 10,700±800

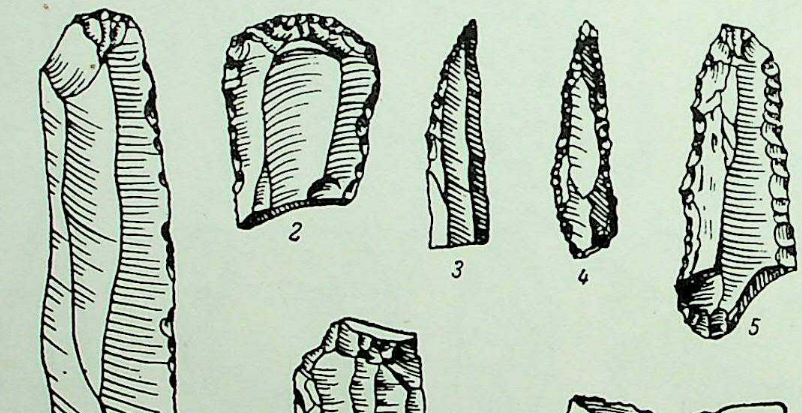


Fig. 5.10. Blade tools and cores from Khodjia-Gor, south Tadjikistan

years; this, of course, may have been slightly over-calculated.

The other sites which have yielded the most significant collection of the Upper Palaeolithic tools are Khodja-Gor which represent the final phase of the Upper Palaeolithic period (Fig. 5.10). The tool-kit includes types such as prismatic cores, thin blades, small discoidal flake-scrapers and 'gravettian' type points, *i.e.*, a series of small flint points with straight or bent edges worked up with a blunt retouch. The blades of this collection are extremely sophisticated and representative of the Upper Palaeolithic tradition. However, it is devoid of real geometric microliths.

It is significant to note that although the Samarkand and Shougnou sites differ a lot from each other in their tool-kits yet in their upper horizons they show marked similarity in core-scrapers, tongue-shaped end-scrapers, and strongly indented blades. "It is still difficult", observes Ranov, "to show that Samark and and Shougnou cultures originated from separate Mousterian facies. At the same time, Shougnou has many elements similar to those of the territorially close Mousterian site at Ogzi-Kichik, and the Samarkand site, as D.N. Lev, its chief investigator, noted. It is in many ways similar to the Mousterian Cave site at Aman-Kutan. We can speak of an Upper Palaeolithic industry existing within the frame-work of the Mousterian techniques of stone splitting. This is more true of the Shougnou site than the Samarkand site." (Ranov 1973)

Finally, the chronology of these sites. The Samarkand site cannot be older than 15,000-20,00 B.C. On the other hand, the upper-most level of Shougnou site has a ^{41}C date of 10,700±500 years. According to geologists, the lower-most level appears to be 20,000 years old.

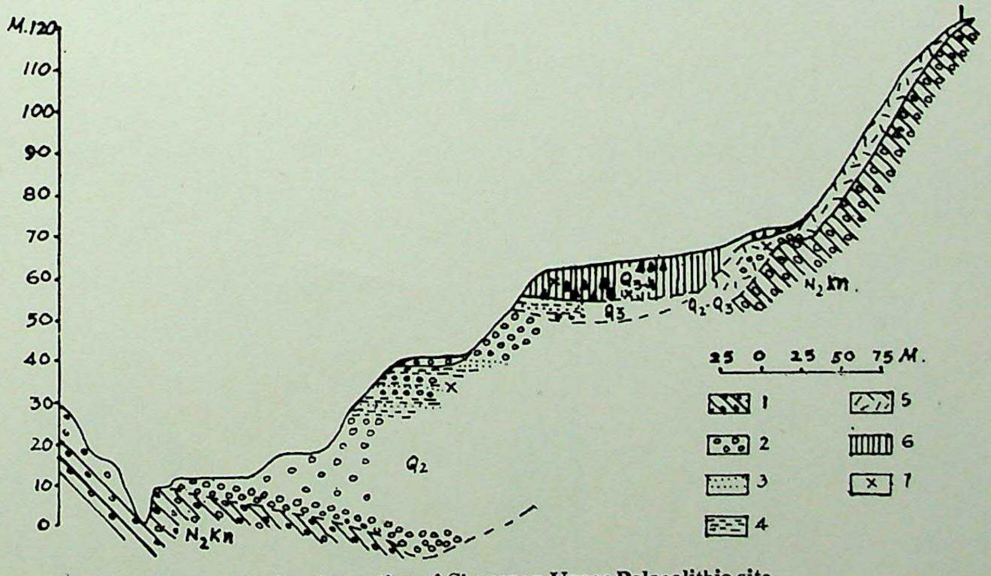
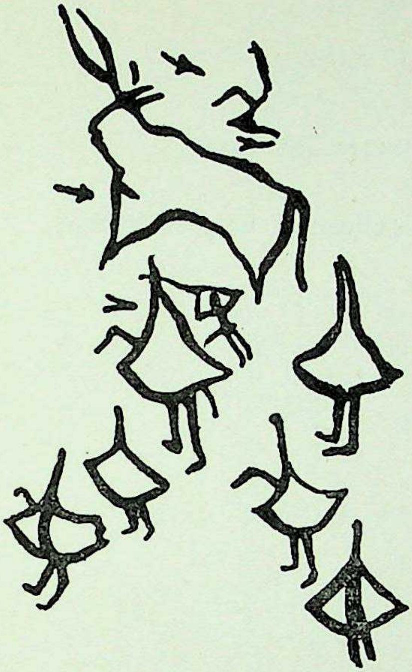


Fig. 5.11. Figure showing the section of Shougnou Upper Palaeolithic site
1=Neogene conglomerate; 2=Gravel; 3=Sable; 4=Clayey material; 5=Loess; 6=Implementiferous level; 7=Faunal level



THE MESOLITHIC

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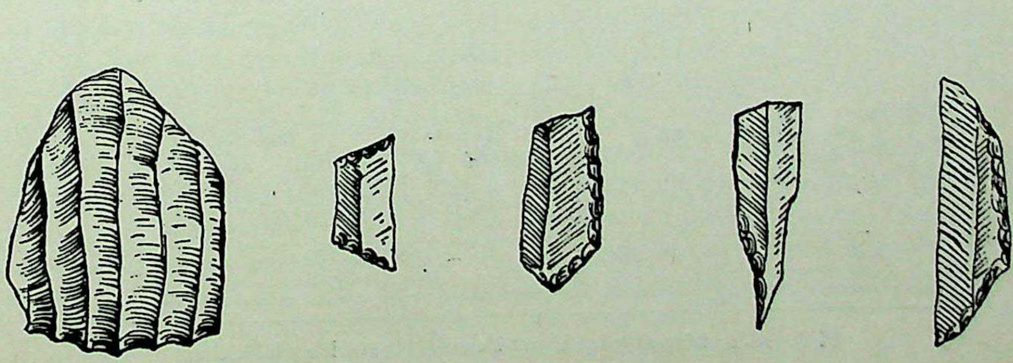
S.6.2 →

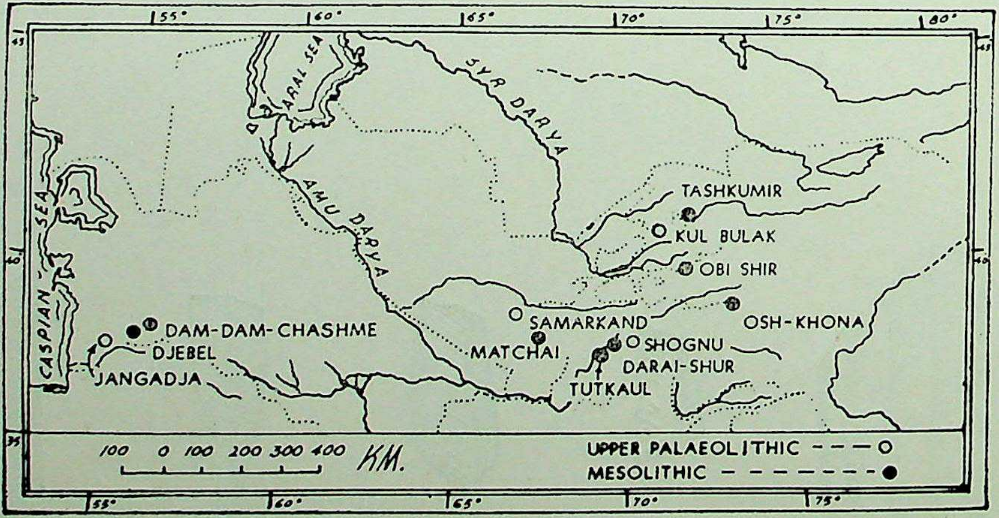


S.6.1=Rock-shelter paintings (in outline) at Zaraut-Sai, southern Tadjikistan
S.6.2=Crescent from Obi-Kiik, southern Tadjikistan

Point from Obi-Kiik, southern Tadjikistan Backed blade from Chil-Chor-Cheshma, south Tadjikistan

Trapeze from Tut-Kaul, south Tadjikistan

Blade-core from Tut-Kaul, south Tadjikistan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OBI SHIR
OSH-KHONA
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DARAI-SHUR
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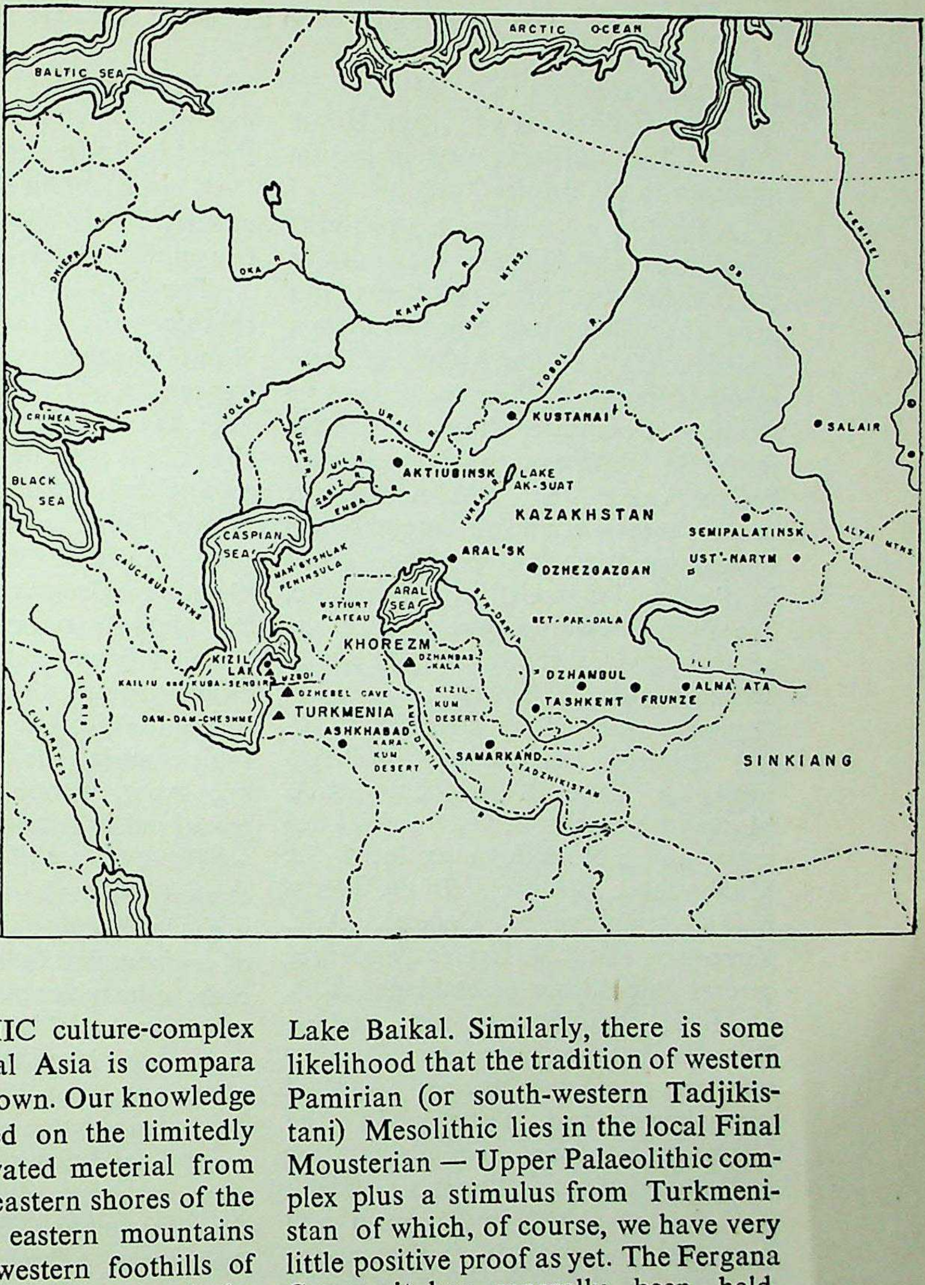
UPPER PALAEOLITHIC ○
MESOLITHIC ●

Fig. S.6.3a. Map showing Upper Palaeolithic and Mesolithic sites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BALTIC SEA
DNIEPR R.
OKA R.
KAMA R.
URAL MTNS.
OB
YENISEI
TOBOL R.
VOLGA R.
CRIMEA
URAL R.
UZEN
UIL R.
SAGIZ R.
EMBA R.
KUSTANAI
SALAIR
AKTIUBINSK
LAKE AK-SUAT
TURGAI R.
BLACK SEA
KAZAKHSTAN
SEMIPALATINSK
ALTAI MTNS.
CASPIAN SEA
MAN'GYSHLAK PENINSULA
ARAL'SK
OZHEZGAZGAN
UST'-NARYM
CAUCASUS MTNS.
USTIURT PLATEAU
ARAL SEA
SYR-DARIA
BET-PAK-DALA
KHOREZM
DZHANBAS-KALA
ILI
KIZIL LAK
UZBOI
OZHANBUL
KAILIU and KUBA-SENGIR
DZHEBEL CAVE
KIZIL-KUM DESERT
ALMA ATA
FRUNZE
TASHKENT
TURKMENIA
DAM-DAM-CHESHME
ASHKHABAD
KARA-KUM DESERT
AMU-DARIA
SAMARKAND
TADZHIKISTAN
SINKIANG
TIGRIS
EUPHRATES

Fig. S.6.3. Map showing important sites with microlithic deposits

THE MESOLITHIC culture-complex of Soviet Central Asia is comparatively very little known. Our knowledge about it is based on the limitedly explored and excavated meterial from four regions : the eastern shores of the Caspian Sea, the eastern mountains of the Pamirs, the western foothills of the Pamir and the Hissar and the Fergana Valley. Researches have shown that while the origin of the Caspian Mesolithic may lie in the Zarzian and related Mesolithic Complexes of north-western Iran and southern Caspian region, the origin of the Eastern Pamirian Mesolithic may be found in the local environmental conditions existing from Tien-Shan to Lake Baikal. Similarly, there is some likelihood that the tradition of western Pamirian (or south-western Tadjikistani) Mesolithic lies in the local Final Mousterian — Upper Palaeolithic complex plus a stimulus from Turkmenistan of which, of course, we have very little positive proof as yet. The Fergana Group, it has generally been held, evolved locally. This analysis, however, does not overlook the existence of underlying uniformity in the mesolithic complexes of different regions in Soviet Central Asia. The uniformity is, of course, only basic since it lies in the diminutive forms of blade and flake tools. It is common knowledge that 'Mesolithic' is not

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interchangeable with 'Microlithic' since microliths start from Upper Palaeolithic and continues in certain areas up to the Bronze Age.

Attention of archaeologists to the microlithic assemblages was drawn in the twenties when Soviet geologists and geographers, who had collected them a decade earlier in Kazakhstan and Turkmenia, presented their collections to them. Microlithic flint tools were found in different contexts — with Bronze Age Pottery near Ashkhabad in southern Turkmenia; on the banks of the now dried up river Uzboi, also in Turkmenia; in Ustiurt plateau, etc. From now onwards systematic survey of these and other sites was started by archaeologists themselves : M.P. Griaznov explored the Sagiz river basin, S.I. Rudenko carried out investigations on Lake Kairan-Kul', A.A. Marushchenko worked in the Aral Sea region and E.N. Basova explored the Man'gyshlak peninsula. In the Trans-Baikal region P.F. Debetes, A.K. Kuznetsov and S.N. Laptev discovered several microlithic assemblages. It is, however, significant to note that in Trans-Baikal they were, as in Kazakhstan, associated with bifacially worked arrow-heads and pottery. In the forties and fifties, two outstanding archaeologists worked on this problem: S.P. Tolstov (1948) in Khorezm and A.P. Okladnikov (1956) in Turkmenia, the latter not only explored these regions but also excavated several sites yielding microliths in different cultural contexts from Mesolithic to Bronze Age. Formozov published the Kazakhstan collections in a number of papers, particularly in a 1953. In 1959 he made a masterly survey of the whole problem in the light of a great controversy : ethnic movement *vis-a-vis* environmental adaptation: where he favoured the latter frame-work. The Mesolithic tools are, however, divided into geometric microliths and non-geometric microliths, as it is done in India.

The division of the Mesolithic microlithic tools into the Geometric and Non-Geometric groups is often chronological, in which case the former is later than the latter. Sometimes, it is regional as well, depending on the heritage of tool-making techniques and the type of fauna available for hunt. It may, however, be noted that the Geometric Group need not be later than the Non-Geometic group. Field data from different parts of the world have clearly shown that while in certain places the levels of the Non-Geometric tools preceded the levels of the Geometric group of tools, the two facies also co-existed in many geographical areas.

The problem of the origin of the microlithic tools in the world context is generally associated with the change of environment that the dawn of Holocene, some ten to twelve thousand years ago, witnessed. This change is recorded not only into the post-Pleistocene topography but also in fauna and flora, temperature and rainfall, and the general condition of life. But it hardly appeared as suddenly as it is sometimes made out. The change from the Pleistocene to the Holocene itself has been slow and gradual and, therefore, the change in the tool-kit also changed slowly and gradually over a few millenina of years. The change from the Palaeolithic to the Mesolithic, therefore, appeared in the last stages of the Palaeolithic itself. In the European context, microliths appear in the Upper Palaeolithic, for example as part and parcel of the Magdelenian complex of France. The change from the long-blade tools to the short-blade tools appeared in many other parts of the world within the Upper Palaeolithic. But European Upper Palaeolithic tool-kit and objects of art put together did not characterize the Upper Palaeolithic, either of Central Asia or of South Asia. The only thing that seems to have happened in the so-called Upper Palaeolithic of these Asian countries, which is comparable to the European situation, is the change from the flake-tools to the blade-tools and the materials used for making tools, from cruder flint to fine quality of flint as well as agate, chalcedony, etc., which belong to the quartz group of minerals. It means, to begin with there occurred technological change in the production of blanks and not in any other aspect of culture. The comparable changes in tool-typology in Europe and Asia is often deceptive since except for three or four types, such as burins, pen-knives, scrapers and backed blades, the Central and South Asian Upper Palaeolithic-kits do not exhibit any of the well-known total complexes of Upper Palaeolithic Europe. Once the individuality of the Upper Palaeolithic of Central and South Asian countries becomes clear to us, the individuality of the Mesolithic of this part of the world also becomes evident.

The Mesolithic of Central Asia has, therefore, only two sources: one, in the neighbouring regions, and, two, in the local Upper Palaeolithic. The former should not surprise us since the cultural zones of the ancient times rarely tally the present day political boundaries. This makes it clear as to why the Krasnovodsk peninsular region on the eastern shores of the Caspian Sea is culturally part and parcel of north-western Iran, trans-Caucasian upland and southern shores of the Caspian Sea. Similarly, it is easy to understand why the Northern Pamir shares Siberian elements (and *vice-versa*) and southern Pamirs have Indian and Chinese traits (and *vice versa*). Fergana Valley, being a land-locked region, is often found developing its own local facies, although it was only broadly so because the valley was easily approachable during all times.

These considerations are backed by the environmental conditions. The mountainous zones of the Eastern Pamirs had bigger games than those found either in the Fergana Valley or in the Caspian region, with the result the tools used here were geometric but only rarely. They were, on the whole, heavier and somewhat cruder including pebble Choppers. On the other hand, the Caspian microliths are characterised by fine, tiny, geometric types.

What we are trying to emphasize is that during the post-Pleistocene era several local facies developed in Central Asia with only marginal contacts amongst them because the Mesolithic, as in Europe, was an attempt to readjust the pre-existing tool-making technologies to the changed environmental conditions (faunal, floral and climatological). In some areas, there was a search for new lands and we do see people occupying certain lands not occupied by man earlier in Central Asia, *e.g.*, the interiors of the deserts and the shores of the seas.

Having this general frame-work before us, we may now proceed to specific regions and sites for details.

The Caspian Sea Group

In the Krasnovodsk peninsula the most representative site is located in the Kailiu caves. Kuba-Sengir is another good site. So also is the site of Kizil-Lai. On the Uzboi river, microlithic assemblages have also been found on Charyshly, Kugunek and Bala-Ishem. Within the same peninsula, in the Balkhan mountains, we get the mesolithic assemblages in the caves of Djebel and Dam-Dam-Cheshma I and II (Fig. 6.1).

We may begin with Dam-Dam-Cheshma I and II caves because they have yielded the oldest stratum of the Mesolithic.

Dam-Dam-Cheshma I has yielded backed blades, lunates, points and pointed scrapers made on flint (Fig. 6.2). The assemblage is devoid of Geometric types. The same is true of the lowest level of Cheshma II, level 9, where even lunates are absent.

The change from the Non-Geometric to Geometric facies occurred in levels 7 and 6 of Dam-Dam-Cheshma II cave.

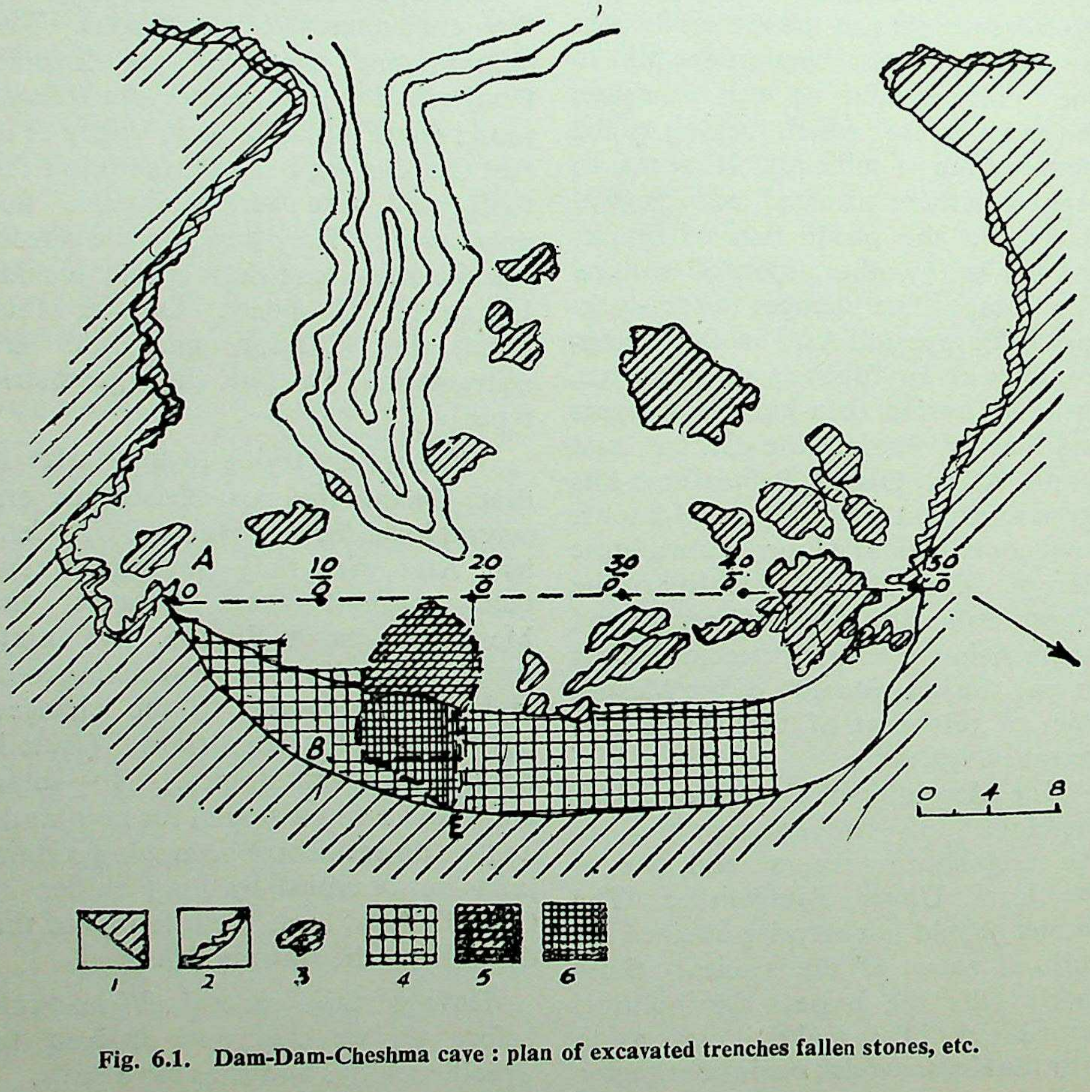

Fig. 6.1. Dam-Dam-Cheshma cave : plan of excavated trenches fallen stones, etc.

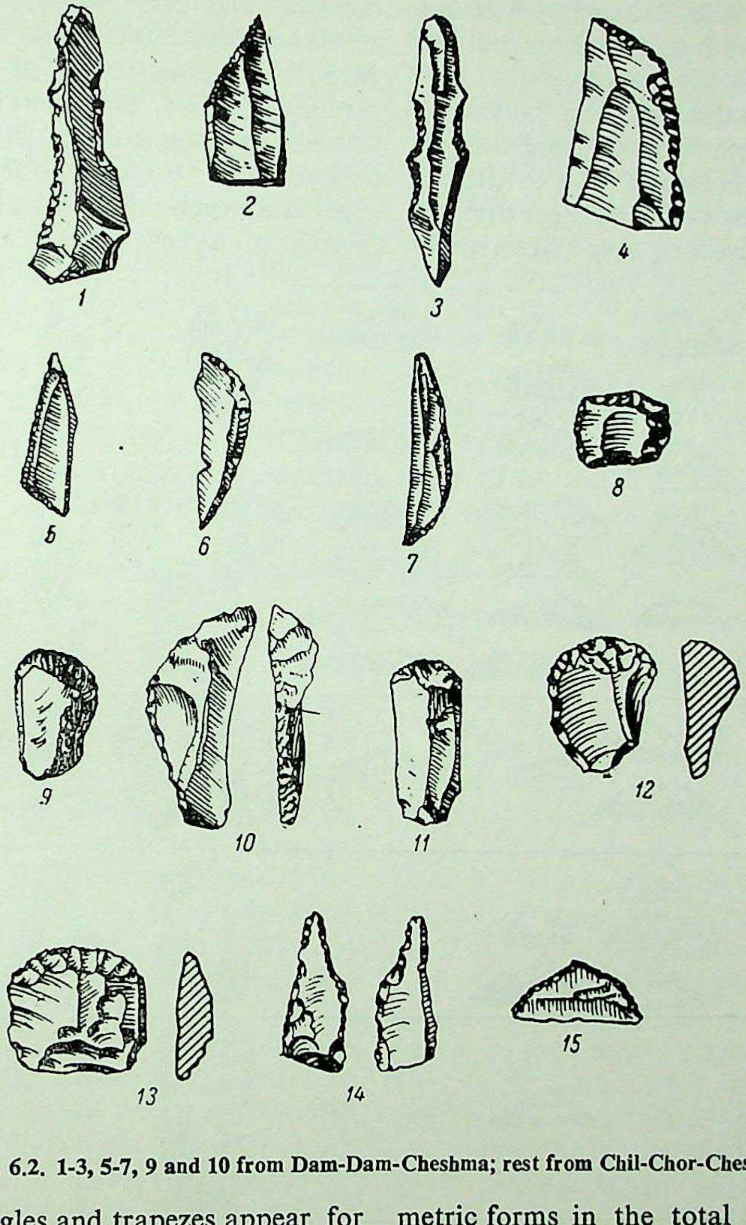

Fig. 6.2. 1-3, 5-7, 9 and 10 from Dam-Dam-Cheshma; rest from Chil-Chor-Cheshma

Here triangles and trapezes appear for the first time. Incidentally, it may be mentioned that these forms evolve out of one basic type, the lunate. As time passes, the industry develops through level 5 and the lower portion of level 4. The geometric forms of the tools become regular and symmetrical, and their proportion *vis-a-vis* the non-geometric forms in the total assemblage increases considerably. In the upper portion of level 4 the sides of the trapeze become somewhat concave, while the backed blades, lunates, penknives and points multiply and become standardized. End-scrapers and concave scrapers also figure prominently (Figs. 6.2 and 6.3). The geometric tools

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predominate in levels 3 and 2 where they are found along with stamped and incised handmade pottery.

Recent analysis of these data shows that there were two important varients in the Caspian Group : one is 'characterized by large asymmetrical trapezes with concave edges, long asymmetrical triangles and thin elongated, heavily retouched segments' as seen in the Late Mesolithic assemblages of the sites mentioned above. The other is characterized by a symmetrical or slightly asymmetrical trapezes with straight edge and right-angled triangles with sharply retouched corners as seen in

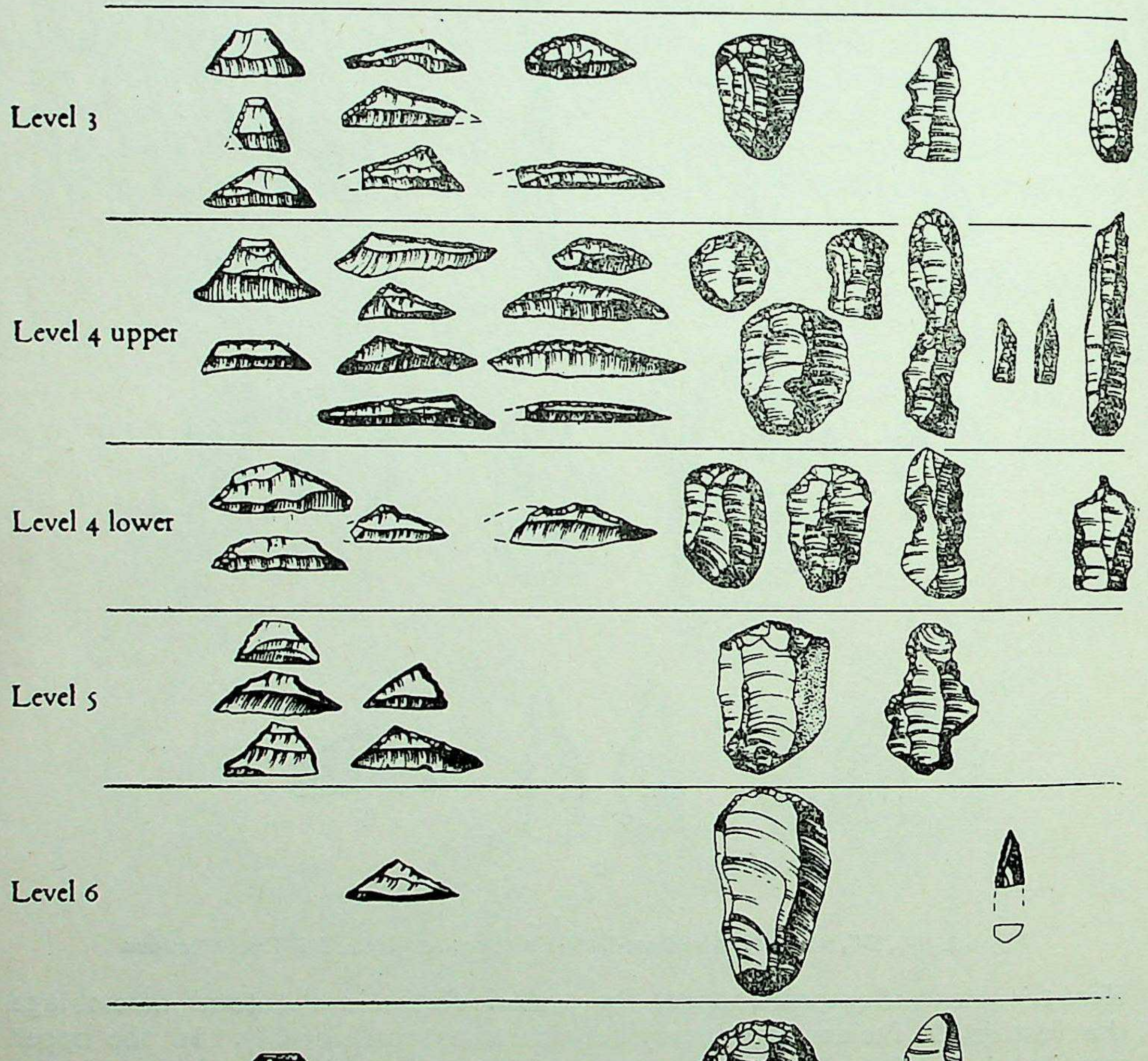

Fig. 6.3. Figure showing mesolithic tools through different levels at Dam-Dam-Cheshma-II cave

layers 7 and 5 of Dam-Dam-Cheshma II and also in the Late Mesolithic of Djebel.'

Although scholarly opinion favours this two-fold division, yet it is 'not clear whether these two variants developed in the Caspian area with a parallel evolution, or whether one of them is the result of infiltrations by groups from the south. In Kailiu the material of the first variant lies right at the bottom of the cave while in the Dam-Dam-Cheshma 2 cave it intrudes in the evolution of the local tradition'.

In any case, one thing appears clear, to Masson, and Sarianidi (1972), that the former variant compares favourably with the 'Middle Mesolithic assemblage of the Mazanderan cave of Gari-Kamarband and Hotu, and also the Zarzian complex of Iranian Khurdistan'. This comparison places the Caspian Group in the bracket of 10th-5th millennia B.C. In the absence of organic remains no ^{14}C date is available so far to help us in fixing more precise dates.

The most favourite game to the people was onager (wild ass which looks like a horse) and gazelle, although they also hunted goat and sheep. The analysis of the bones shows that the flesh of water fowl, fox and wild cat were also their favourite items of food. Fish was another favourite dish with them. The Kailiu Cave yielded large amounts of fish-scales and bones of the variety like sturgeon. Djebel, which is situated near Uzboi river, now almost completely dried up, has also yielded bones of fishes, like carp and sturgeon.

But possibly much more important is the discovery of the bones of a domesticated goat in Level 4 of the Dam-Dam-Cheshma II cave, which may be dated in the 7th millennium B.C. This has also been the evidence of the Gari-Kamarband cave in Iran and Gari-Mar cave of Afghanistan. However, it was not taken to its logical conclusion since we have no evidence of the domesticated cereals or even of the sickle blades. Agriculture could not develop here, may be, bacause of the adverse environmental conditions. But the curious thing is that in the region where we get the beginning of agriculture, *i.e.*, in the Kopet Dag submontane region of southern Turkmenia, there is no evidence of Mesolithic settlement. It may mean that there was a shift in population, whether it was due to any sudden change in climate has not been worked out in detail but possibilities of this kind do exist.

The Fergana Group

Moving eastward, we reach the Fergana Valley where V.A. Ranov excavated the cave of Tash-Kumir and U. Islamov dug the caves of Obi-Shir I and II. Besides these, explorers have discovered some open-air sites. As in the Caspian Group, there are two distinct stages in the development of the Mesolithic complex in the Fergana valley. In the lower levels of the Obi-Shir and Task-Kumir caves, the artefacts are comparatively heavier and cruder than those from the later levels. They include blades and flakes as blanks, and tools, such as scrapers and points. In the upper levels, however, the blanks consist of micro-blades and tiny flakes and tools include scrapers, points, etc. There is no geometric tool in the whole kit but lunates are there. The Fergana Group is, therefore, characterised by micro-blade tools devoid of real geometric types.

In this connection it is significant to note that in northern Afghanistan also, at sites like Gari-Mar, excavated by Dupree, the Mesolithic assemblage consists of micro-blades and it is dated to the eighth millennium B.C.

South Tadjikistan Group

This group of material comes from a number of sites, located mainly near the sources of fresh-water springs and in the valleys of the tributaries of the Amu Darya, such as Machai, Surkhan, Kafirnigan, Vaksha and Aksu, which flow across the hilly region of the low ranges of the Hissar (Gissar) and other offshoots of the Pamir in south-western Tadjikistan. The major sites are Tut-Kaul, Obi-kiik, Dangara, Chil-Chor-Cheshma and Kul-Bulien.

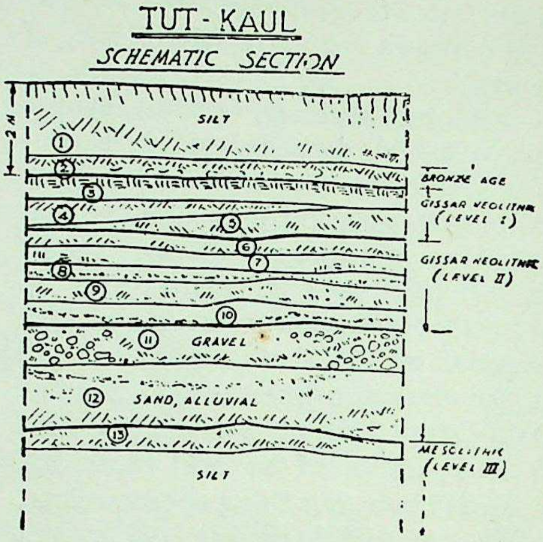

Fig. 6.4a. Schematic Section, Tut-Kaul

Athough by now several sites have been excavated where tools of this facies have been found in the lower levels, yet the general nature of the layers and the deposits shows that these were temporary camp-sites. Of these, possibly Kul-Bulien belongs to the earliest group. Here blades with blunted edges, points and geometric forms, including a triangle, have been found. Belonging to the Late Mesolithic stage are the sites of Chil-Chor Cheshma, from where symmetrical trapezes and a small lunate came, and Tut-Kaul which yielded small rectangular trapezes, flake scrapers and large pointed scrapers. The upper part of horizon II has been dated to 5150±140 B.C. The lower horizon, according to Ranov, may go back to 9th/10th millennium B.C. (Plates VI to VIII).

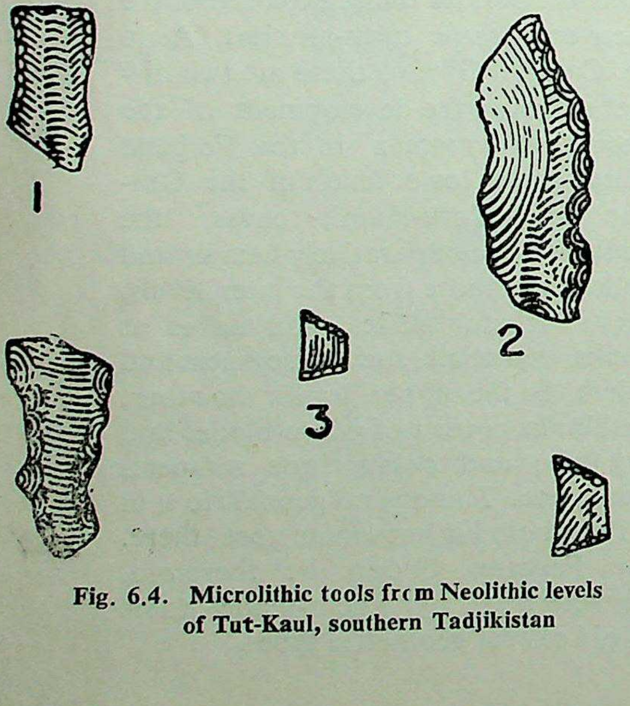

Fig. 6.4. Microlithic tools from Neolithic levels of Tut-Kaul, southern Tadjikistan

Coming to the individual sites, we may start with Tut-Kaul which has been excavated by Ranov. It is located on a wide terrace of R. Vaksha in the high mountainous zone. The place was once threatened by a hydro-electric plant under construction. It is a multi-culture site (Fig. 6.4a and 4b) whose

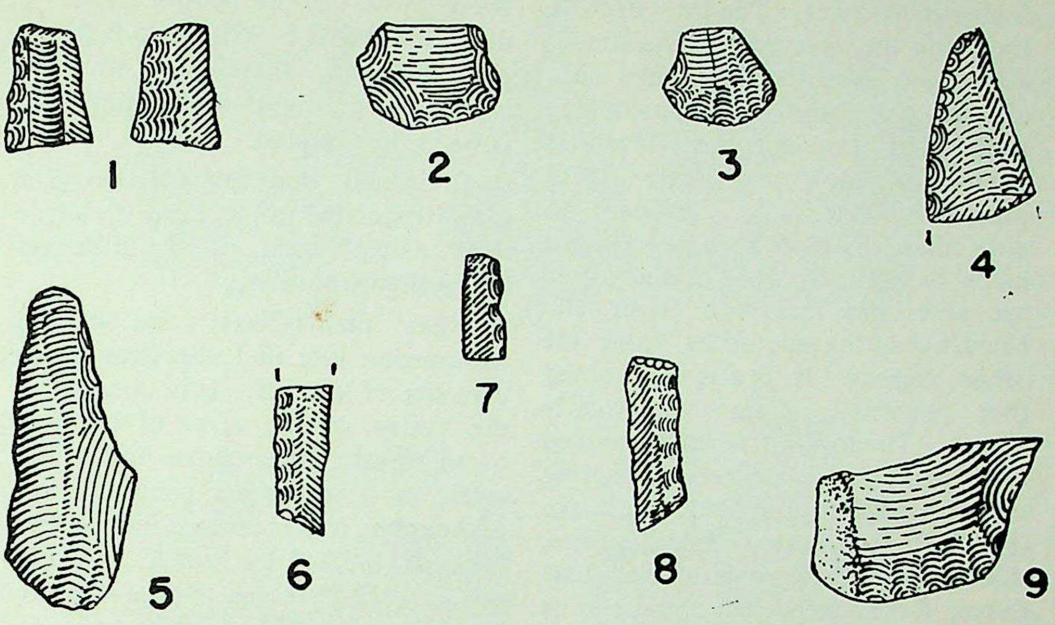

Fig. 6.5. Mesolithic tools from Tut-Kaul IIIrd Level, southern Tadjikistan

deposits rise to the height as much as 7 m. This has been divided into three cultural levels, the lowest being the Mesolithic and the upper-most Bronze. The Mesolithic deposit is, however, very shallow, hardly 5 cm in thickness. It is characterized by somewhat retangular trapezes with retouched and blunted backs (Fig. 6.4 and 6.5).

The site of Chil-Chor-Cheshma has both flakes and blades as blanks. Points and backed blades, as also trapezes and crescents, are found in a large quantity (Fig. 6.6; also Fig. 6.2).

From the point of view of tool-typology, possibly Obi-kiik (Fig. 6.9) is richest. It includes plain long-blades, denticulate blades, backed blades, points, borers, lunates, hollow-scrapers, and, end-and side-scrapers (Fig. 6.9). But what is more significant of this collection is the use of pebbles and split pebbles of pink chert as cores for producing blades and flakes.

On the whole, the tools of this group are somewhat bigger than those found in the Fergana Valley; in fact, tools of micre-blades are practically nil. But possibly the most significant aspect of this group of tools lies in the fact that the tools continue to be made and used in the succeeding period of the neolithic culture, called Hissar Culture, which is also characterised by tools made on pebbles (See Ch. 1, Vol. II).

The Eastern Pamir Group

There are nearly two dozen sites of this group, located mostly in the open Alpine land. Of these, Osh-Khona and Karatumshuk are the largest sites.

Osh-Khona is located at a very high altitude (Plate IX), about +4200 m, near

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a glacier-fed river. The total deposit, including the intervening alluvium, is about a metre thick. It has been divided into four levels, all belonging to the Mesolithic complex. The total number of tools and waste flakes exceeds 10,000. It is significant to note that the tools have largely been made on flakes. Since fluted cores are rare, the tools are larger and heavier than the microliths from the other regions. It is also to be noted that geometric forms are totally absent. The tool-kit is characterized by disc-like and oval cores, including those on pebbles and blade-like flakes (Fig. 6.7). It includes pebble choppers, side-scrapers knife points, triangular flakes, flakes retouched along two or more sides, steeply retouched points and end-scrapers as well as mousterian like flake-scrapers (Fig. 6.8). There are five bifacially worked (with pressure-technique) arrowheads, which may be imports since this kind of retouched tools of other categories are not found in this kit.

But possibly the more important discovery has been a hearth and the bones of the hunted birds, rodents, mountain sheep and goats since put together they give us a peep into the everyday life of the people. The ^{14}C date of Level II is 9530±130 B.P. In all likelihood, therefore, the site belongs to the eighth millennium B.C., same as the Caspian.

It is felt that this assemblage is distantly-related to the Late Palaeolithic assemblages of the Siberian-Mongolian tradition.

Near Teshik-Tash, the famous Mousterian site in Uzbekistan, is the cave site of Machai. It is located in the valley of the river of the same name, some 70 m above the water level, in a cemented conglomerate. Although it was excavated first as far back as 1938-42 by Prof. G.V. Parfenov, in 1970-71 it was re-excavated by U. Islamov. The tool-assemblage, mostly consisting of finished tools, is represented by retouched blades and micro-blades, scrapers on flakes, a small quantity of burins and points, as also choppers. It is significant to note that the bone tools consist of borers, pins, saws, knives, etc. A few pieces are decorated with incised geometrical patterns.

Islamov has dated this assemblage to late Mesolithic, although the ^{14}C date—5600 B.C.—takes it to the early

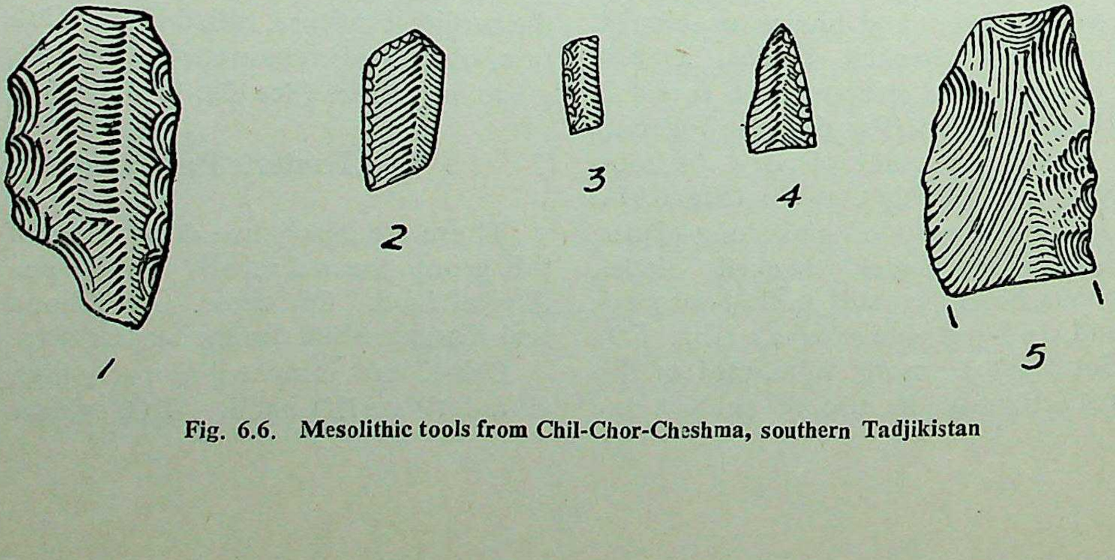

Fig. 6.6. Mesolithic tools from Chil-Chor-Cheshma, southern Tadjikistan

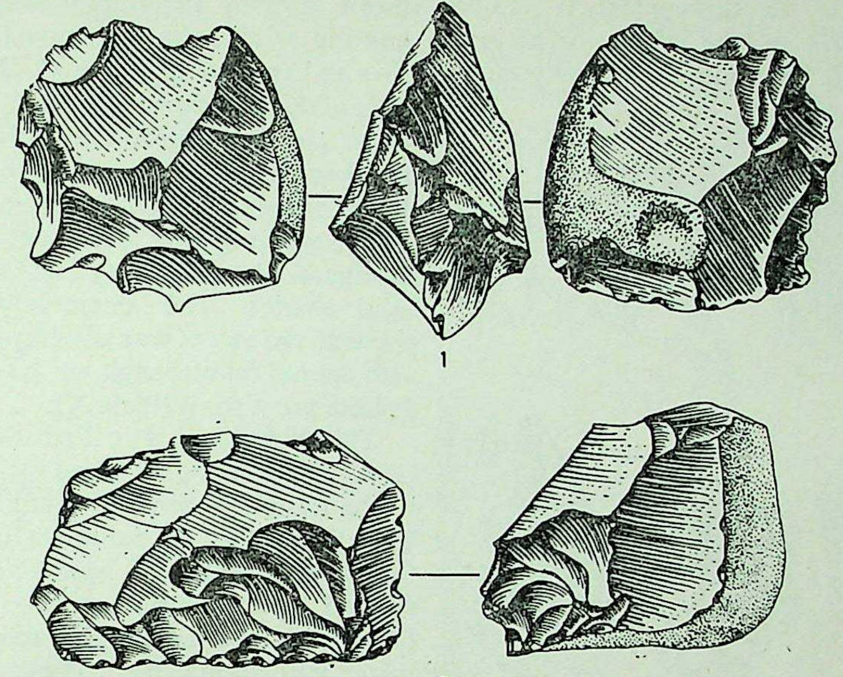

Fig. 6.7, **Bifacial bebble tools from Osh-Khona**

(The Oshkhona materials enable us to describe the physical conditions of the past also. The animals that the inhabitants of the settlement could hunt include large mammals (Ovis and Capra), rodents (chiefly hares and marmots), and birds. The fireplaces have preserved some charcoal remains which have enabled to identify the wood: the *Betuta Juniperus*, and *Eurotia* ceratodies shrubs that were used as fuel. The pollen of xerophyac shrubs and grasses has been found by M.M. Pakhomov to predominate in the river deposits of Oshkhona, while the pollen of woody plants is virtually nil).

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Neolithic. In this context, it is to be noted that in the whole collection, geometric microliths are totally missing.

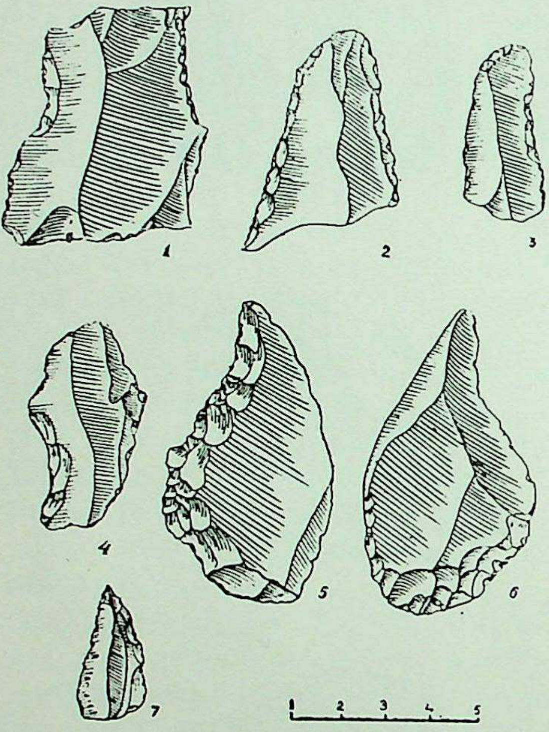

Fig. 6.8. Mesolithic blade tools from Osh-Khona

THE CAVE PAINTINGS

Belonging to the Mesolithic (according to some authorities, Upper Palaeolithic) period, there are some cave paintings also. There are two such caves, well-known to scholars, one is Zaraut-Sai (or Zaraut Kamar) located in the Baba Tag mountains whose ranges run into south-western Tadjikistan and south-eastern Uzbekistan. The site is about 100 km east of Termez in Uzbekistan. There are more than 200 paintings executed in red ochre. Most of them represent animals but some appear to be hunting scenes. In them, hunters are usually shown dressed in animal skins and shooting wild bulls and goats with bows and arrows (Fig. S.6.1). Dresses made of skin are usually in the shape of skirts, *i.e.*, bell-shaped. Significantly, the men in these hunts have been shown as being assisted by dogs.

The painting style is silhouette, *i.e.*, the figures are completely filled in with solid shades. The commonly used pigment, red ochre, was possibly mixed with animal fat although we have no definite proof for it (Plate X).

The other cave is called Shakhta Cave which was discovered by Ranov in the Eastern Pamirs of Tadjikistan. The theme of its paintings is also the same—groups of animals interspersed with hunting scenes. These have also been executed in red ochre mixed with animal fat. These paintings, however, differ from the Zaraut-Sai paintings in certain technical aspects. The figures have been drawn in outline, *i.e.*, they are usually linear rather than silhouetee. The animals include boars and bulls, possibly yak. Arrows have been shown piercing the body. Was it then a part of some magic?

In a number of examples, the paintings overlap each other, indicating two things : first, that the same surface was used again and again over a long period of time, and, secondly, each time a new painting is executed, the 'purpose' for which the earlier one was commissioned may have been over. It means, the purpose behind the execution of the paintings was, in every case, just 'immediate', possibly connected with the prayer for success in hunt, or of other magical import.

The cultural deposit in the Shakhta

Cave was Mesolithic or Early Neolithic and, therefore, they may be dated to the 7th or 6th millennium B.C.

These prehistoric paintings are imbued with a sense of partial realism which characterized some of the Upper

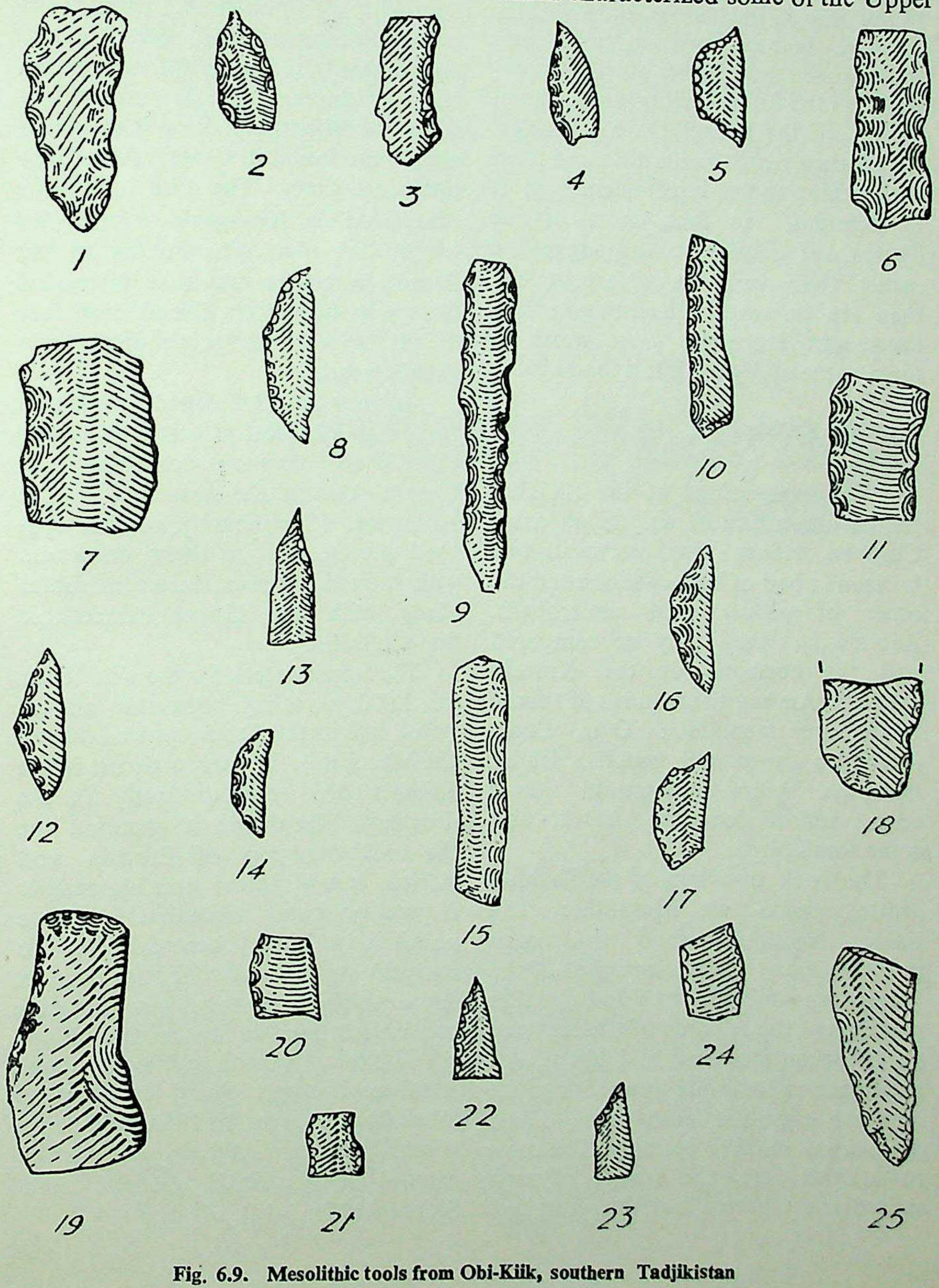
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Fig. 6.9. Mesolithic tools from Obi-Kiik, southern Tadjikistan

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Palaeolithic paintings of Europe. In fact, Ranov has tried to compare them with the paintings in Grotee de Niaux in the Ariege, located in south-western France. It may, however, be clearly understood that none of these paintings has the force, feeling and imagination of the French Cave paintings. To create a realistic situation and form is one thing and to inject feeling in it is different. In fact, most of the figures are schematic and suggestive rather than realistic. Nevertheless, they are extremely interesting in their theme and execution since most of them successfully exhibit dynamism.

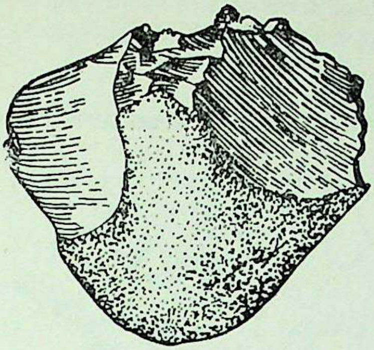
SHAKHTA CAVE

"The excavations of the Shakhta grotto are up to 20 sq. m. in area. Chipped stones also occur in two horizons : one of humus-adobe and the other of yellow sand underneath. Arbitrarily, they may be compared with the horizons of the Kurteke shelter. Among the remains of animal bones are identified : Ovis, Capra (domestic sheep and goats?), hares, marmots, pikas, mountain silver voles, yellow lemming, hawk, and some small birds.

The rock drawings of the Shakhta grotto, dated as Mesolithic and Early Neolithic, show that even more recently the environment of the Pamir was milder than today. The grotto is at the left side of the Kurteke gorge at an elevation of 4,200 m. All the pictures are made in mineral paint and are classified among the oldest discovered in this country. The most remarkable are the images of man attired as an ostrich and the drawings of wild boars. That man and the ostrich, a typical denizen of savannas, could exist side by side in the Pamirs is almost inconceivable. Perhaps the prehistoric hunters had seen the bird somewhere in the vicinity, not necessarily on the spot. In this connection it should be borne in mind that ostrich eggs were found in Central Asia up to historical times. The bird probably also lived in Kashgaria where the Mesolithic man who hunted in the Pamirs in summer may have descended to stay in the winter. The opinion that the picture was totemic is characteristic in this respect.

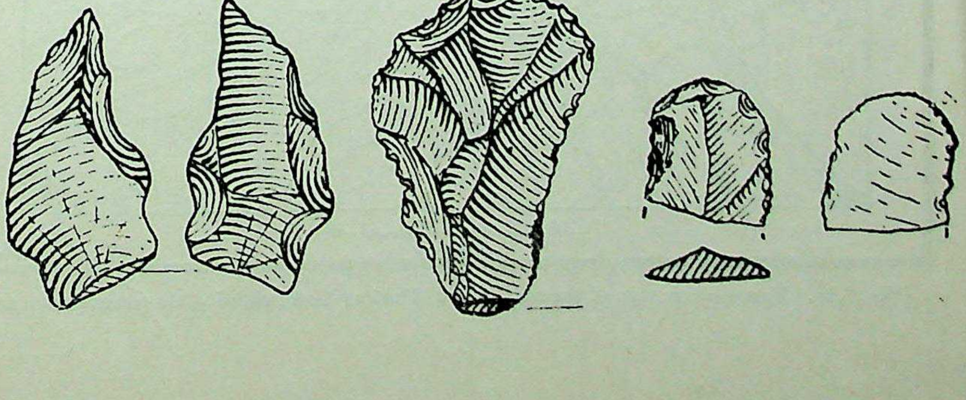
Apparently, the ostrich could still persist in a habitat principally close to that of the savanna somewhere in Central Asia in the first half of the Holocene. [Significantly, ostrich egg-shell pieces, one of them decorated with incised patterns, have been found along with the Upper Palaeolithic finds in India.]

The upper extent for the wild boar is 3,000 m today. But the animal could live in the Pamirs as well during the Mesolithic. The arrow thrust in the animals are seen distinctly in the drawings. The theme is common for the rock drawings of Eurasia and Africa. It is a typical hunting magic. It was practised immediately before going to a hunt. According to the natives' stories, the wild boar lived in dense thickets of tugai growing as a continuous band as far as the village of Vakhan (absolute height about 3,000 m.) in upper Pyanj as early as 30 to 40 years ago. In 1957, wild boars roamed from Afghanistan up to around Ishkashim." (Ranov and Sidorov 1961, 7-12).



BEYOND CENTRAL ASIA

S.7.1 ↑
S.7.2→



S.7.1=A pebble chopper (Middle Palaeolithic) from Kara Bura, southern Tadjikistan
S.7.2=Flake point, scraper and broken blade (Late Palaeolithic) from Hazar Sum, North Afghanistan

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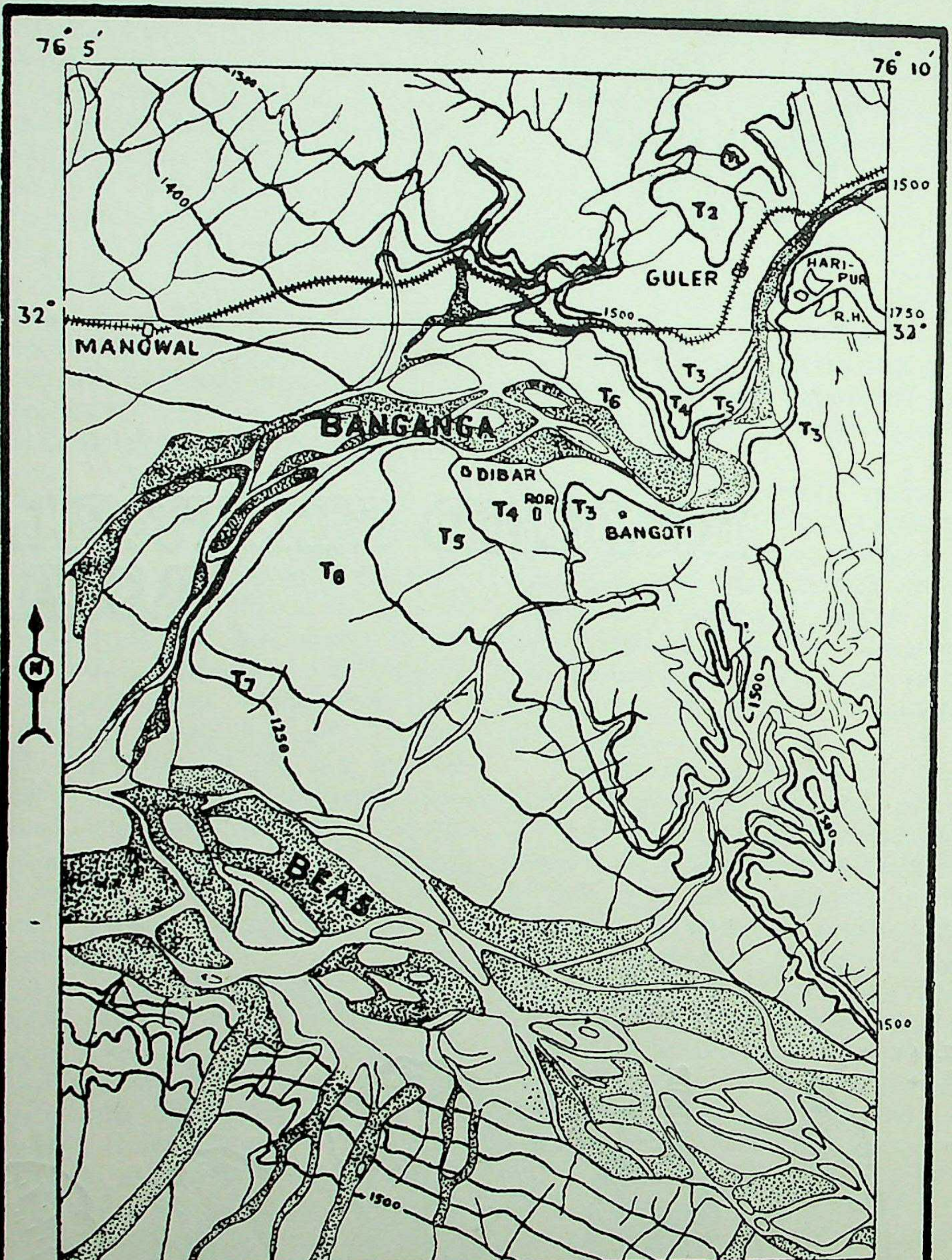
76° 5'
76° 10'
1300
1400
1500
T2
GULER
HARI-PUR
R.H.
1750
32°
32°
MANOWAL
1500
T3
T6
T4
T5
T3
BANGANGA
DIBAR
ROR
T4
T3
BANGOTI
T5
T6
N
T7
1250
1500
1500
BEAS
1500
1500
0
MILE
SCALE
G.J. SAINI

Fig. 7.3a. Topographic map of the area around Haripur-Guler showing the terrace sequence

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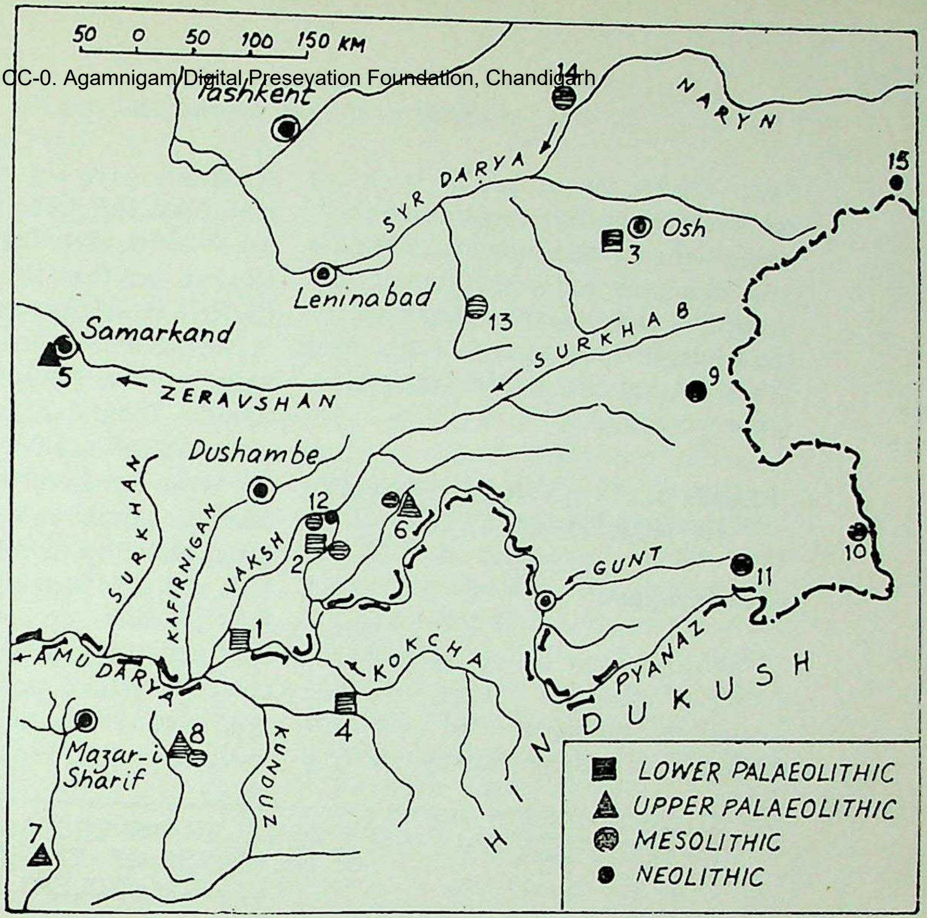
50 0 50 100 150 KM
Tashkent
14
NARYN
SYR DARYA
15
Osh
3
Leninabad
13
Samarkand
5
SURKHAB
9
ZERAVSHAN
Dushambe
SURKHAN
KAFIRNIGAN
VAKSH
12
2
6
GUNT
10
11
1
AMU DARYA
KOKCHA
PYANAZ
HINDUKUSH
4
8
Mazar-i Sharif
KUNDUZ
7
LOWER PALAEOLITHIC
UPPER PALAEOLITHIC
MESOLITHIC
NEOLITHIC

Fig. S.7.3. Sites : 1 Kuhi-Pies, 2 Ogzi Kichik; 3 Uch Kurgan; 4 Darra-i Kur; 5 Samarkand; 6 Shognou; 7 Ak-Kupruk; 8 Kara-Kamar; 9 Osh-Khona; 10 Karatumshuk; 11 Alishur; 12 Tut-Kaul 13 Khodja-Gor; 14 Tash-Kumir; 15 Terek

INTEREST in the Palaeolithic cultures in India, Pakistan and Central Asia is comparatively a recent development. It is more so in the case of explorations in the sub-Himalayas and the offshoots of the Pamirs, the regions which are rich archaeologically. In the Himalayan region it started with the Yale-Cambridge Expedition in 1935 and in the Pamirs in 1953 when the pebble tools were first discovered by Okladnikov. However, as far back as 1938 the cave of Tashik-Tash was excavated and the beginning of Palaeolithic studies in Central Asia was thus laid, but it remained without any significant follow-up action for more than a decade.

In the Himalayan foothills, the Siwalik formations, traversed by the Indus system, from the Peshawar valley in Pakistan to the Kangra valley in India, formed the original habitat of the Palaeolithic men of northern India. Located in the low ranges of the Pamir-Alai system, (the Gissar, Baba Tag, Zaravshan, etc., traversed by the Amu and Syr and their tributaries), the region from southern Kazakhstan to Tadjikistan, formed the original habitat of the Palaeolithic men of Central Asia. Geographically, these two areas are contiguous, the factor which may have played an important role in bringing different peoples of these regions together, at least face to face. Recent researches in both the regions have, in fact, thrown some welcome light in this direction. We are now in a position to visualize not only a parallel and similar development of the Palaeolithic cultures in India and Soviet Central Asia but also their occasional contacts.

PLEISTOCENE STRATIGRAPHY IN NORTHERN INDIA

After Mohapatra

"As at present so in the past, the climate, drainage pattern and the various geographical and physical features of these zones, barring Kashmir, were solely and uniformly controlled by the physiography of the Western Himalayan ranges. Being situated in the submontane region, the first similarity among them is seen in the peculiar configuration of the valleys, which are popularly called the 'Dun'. These duns have an average elevation of 1200 to 1900 feet above the Mean Sea Level and are separated from each other as well as from the lower plains by very wide intervening hilly spurs. In fact, each dun is blocked from all sides excepting the narrow inlet and outlet of the channel. These are longitudinal spindle-shaped, flat-bottomed valleys, usually 35 to 75 kilometers in width. With the Sub-Himala-

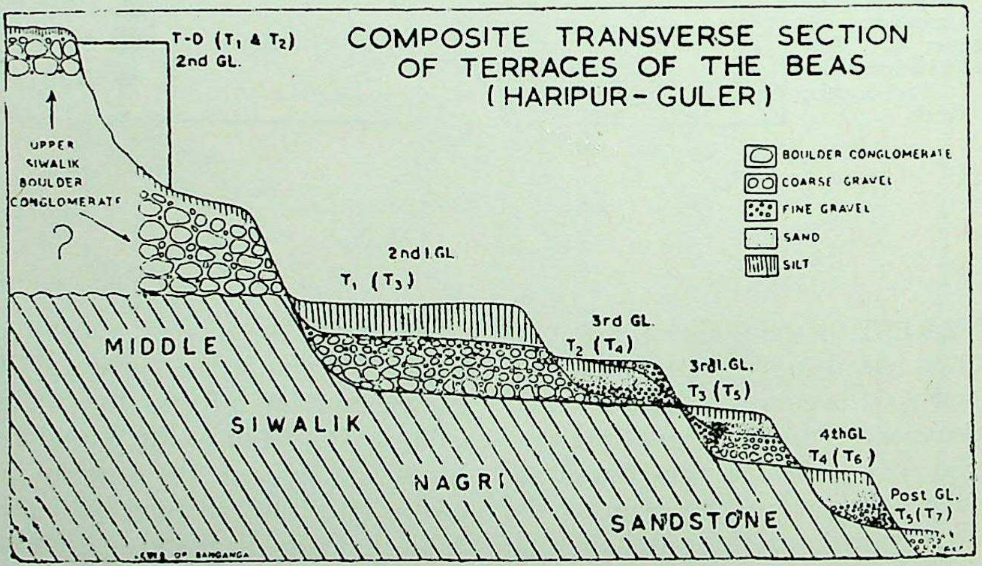
COMPOSITE TRANSVERSE SECTION
OF TERRACES OF THE BEAS
(HARIPUR-GULER)
T-D (T1 & T2)
2nd GL.
UPPER
SIWALIK
BOULDER
CONGLOMERATE
?
BOULDER CONGLOMERATE
COARSE GRAVEL
FINE GRAVEL
SAND
SILT
2nd I.GL
T1 (T3)
3rd GL.
T2 (T4)
3rd I.GL.
T3 (T5)
4th GL
T4 (T6)
Post GL.
T5 (T7)
MIDDLE
SIWALIK
NAGRI
SANDSTONE
LEVEL OF BANGANGA

Fig. 7.1. Kangra Valley terraces. ***After Mohapatra***

Scale : Vertical 2·5 Cms=20 Metres
Horizontal 5 Cms=1 Kilometre

The heights of the seven terraces are as follows :

T 1—578 feet on the right bank of the Banganga
T 2—395 ,, ,, ,, ,,
T 3—278 ,, ,, both the banks ,,
T 4—218 ,, on the left bank of the Banganga
T 5—158 ,, ,, ,, ,,
T 6— 98 ,, ,, ,, ,,
T 7— 28 ,, ,, ,, ,,

yan ranges on the north and the Siwaliks on the south, each one of these contains a series of implementiferous terraces which have developed directly over one or the other of the fossiliferous beds of the Siwaliks. These common features, coupled with uniform geographical and environmental conditions had welded these zones into one cultural unit all throughout history despite changing political boundaries.

BEAS VALLEY

In the valley of Kangra, around Guler railway station, and a little to its south, a number of implementiferous terraces (Fig. 7.1) occur on the banks of a small hill stream, called the Banganga, a tributary of the Beas. This stream flows through the twin villages of Haripur and Guler and meets the Beas, about 8 kilometres due south. These terraces are important not only for their lithic contents but also for their well developed features and succession of deposits. Beginning from little above the railway station, seven terraces can be counted, till one reaches the Beas (Fig. 7.1).

Terrace 1 & 2 (2nd Glacial) :—Although the T1 and T2 seen above the railway station superficially appear to be terraces, the author is in full agreement with Joshi (1974) that their development cannot be assigned to river aggradation. The isolated occurrence of these two terraces with enormous height and steep contours speaks of their being the remnants of some older deposit which has been cut from all the four sides by streams like the Banganga, Oaj Khad and their monsoonal feeders. The author believes the core to be a prism of the Upper Siwalik Boulder-Conglomerate formation which is buried under a thick mantle of quartzite and sandstone boulders and pebbles embeded in a reddish clay matrix. Similar Upper Siwalik formations have been noticed in the Paonta region of Himachal Pradesh and the valley of the Ravi in Jammu to the south-east and north-west of Guler, respectively, along the main srtike of the Siwaliks (Sahani and Mathur 1964).

The relative context of the river terraces of later date with the Boulder-Conglomerate formation in the whole of foot-hill region is of utmost importance because the latter has a firmly established date, *i.e.*, 2nd Glacial. The age of the terraces resting over/against it, therefore, have to be worked out in terms of major climatic changes in this area, subsequent to the 2nd glaciation. However, the T1 and T2 at Guler, being datable to Upper Siwalik Boulder Conglomerate, become exactly the parallel of T-D in the Soan valley; and the succeeding terraces in the Beas valley are precisely of the same number as has been noted in the Potwar region.

It should be pointed out here that the terraces at Haripur-Guler are ascribable to the aggradation of the Beas and not to that of the Banganga as was formerly held. These terraces fan out from both the banks of the Banganga and run parallel to the channel of the Beas, all along its right bank, from Dehragopipur down till Talwara. The isolated patch of Boulder-Conglomerate (T1 and T2) at Guler railway station is nearly 8 km away from the channel of the Beas, exactly like the T-D of the Soan which is seen as flat-topped hillocks, well away from the river, at the fringe of the valley. Periodic Himalayan orogeny which resulted in uplifting of the foothills from time to time and accumulation of massive debris in the bed of the river had forced the channel of the Beas to receed farther and farther south, leaving breaches of its load, now seen as terraces. The fluctuation of climate due to glacial conditions in the Dhauldhar, not more than a hundered kilometres away to the north, must have controlled the behaviour of the Beas and its tributaries. Therefore, although there is no evidence of moraines on any of the terraces, there can be little doubt about their origin due to indirect effects of the glacial and interglacial conditions.

Terrace 3 (2nd Interglacial) :—The T3 of the Beas, over which the two villages of Guler and Haripur are situated, is the most prominent topographic feature clearly visible as broad flat tract above 1500 feet from the Mean Sea Level in all the foot-hill duns. The maximum concentration of Early Soan pebble tools is seen on this terrace occurring in the top one metre of its red silt cover. Underlain by the silt is a thick layer of gravel laid uncomformably on the top of the Middle-Siwalik Nagri zone. That this gravel is the re-deposited Boulder-Conglomerate is attested by the presence of pebbles of basic volcanic rocks in it. Thus in its relative position, composition and lithic contents, the T3 at Guler is equivalent to T1 of the Soan valley. As the re-deposition of the Boulder-Conglomerate had taken place during the 2nd Interglacial erosion, the age of this terrace and the Early Soan industry can be assigned to that period.

Terrace 4 (3rd Glacial) :—The gradual narrowing of the channel of the Beas, as a result of on setting of the 3rd Glaciation in higher altitudes, had trenched a part of the T3 to a depth of more than sixty feet, thus forming the T4. Over this terrace, on the left bank of the Banganga, is situated the village of Ror, nearly four kilometres to the south of Haripur. The terrace here has a deposit of small gravel, sand and silt, occurring sccessively over a basal gravel bed, the latter as remnant of T3. The grading of the deposits from coarse at the bottom to fine at the top, is indicative of the gradual dwindling capacity of the river. From the cultivated fields on this terrace, Early Soan pebble-tools, small flake-tools of dirty chert, belonging to a new industry, and numerous Neolithic polished stone celts have been found. Due to the absence of stratigraphy, the age of the new flake-tool industry is largely a matter of conjecture. However, the pointed polished-stone celts, being very much well known, Neolithic types pose little problem as regards the chronological position." (See Vol. II, pp. 26-29 for our comments on these tools)

Although "the flake-tools based on cherty and flinty raw materials are completely patinated, they show little sign of rolling or weathering. Hundreds of them lie scattered over a small area of intensively ploughed flat land which was either a living place or a factory site. The fresh physical condition indicates that the artifacts were not brought down from any distance and deposited along with the silt on the top of this terrace. Therefore, the industry is younger than the T4, and therefore post-3rd Glacial in age. Barring one or two washed down examples, the following terraces, like T5, T6 and T7, yield no conclusive evidence of the existence of this industry over them.

This leads to the conclusion that the flake-tool industry flourished at a time when the younger terrace (T5) was under formation and the older terrace (T4) had already become a firm feature of the landscape. But this possibility is discarded because a part of the T4 had been subjected to inundation and disposition of great quantity of washed-down gravel due to the onsetting of the 3rd Interglacial condition. Therefore settling of the authors of this industry on T4, during the 3rd Interglacial, is very doubtful. Probably, this industry did not appear till the beginning of the 4th Glaciation when due to distant receeding of the water by further narrowing of the channel of the Beas, the T4 must have become suitably dry and habitable with adequate vegetation cover, etc. The T5 at this time must be very much unconsolidated, damp, waterlogged and devoid of vegetation which had just emerged from the bed of the river and the T6 had yet to take shape.

Terrace 5 (3rd Interglacial) :—A deposit of re-washed, big sized pebbles and boulders resting against the fringe of T4 and sloping down to the base of T5 indicates the beginning of the fluvial condition of the 3rd Interglacial. Over this basal gravel in T5 several thin layers of smaller gravels and sand occur in repeated succession with a cover of silt at the top. These finer sediments indicate the gradual swing of the climate towards the forthcoming final glaciation. No industry is found in-situ on this terrace.

Terrace 6 (4th Glacial) :—This terrace has a thick layer of fine gravel, succeeded by a layer of coarse sands and finally topped by reddish silt. As has been stated above, probably the industry of small flake-tools belongs to this period when the terrace was developing although none of its deposits contain any direct evidence.

Terrace 7 (Post-Glacial) :—Effects of post-glacial release of huge quantity of water from higher altitudes are found everywhere in the valley situated in the Himalayan foot-hills, in the form of great unconsolidated boulder-fans filling the valleys, bed of the rivers or scattered over the slopes. This period is marked by wide spread erosion, dissecsion of peneplain and flattening of the valleys. As the aridity had since then been steadily increasing, the ever narrowing channel had to trench through the latest debris brought down to its bed by the post-glacial overflow. Therefore, the last and the youngest terrace, T7 of the Beas, is found in the river bed itself composed of all sorts of materials re-washed and unconsolidated, subject to inundation in high monsoonal floods.

SIRSA VALLEY

The valley of the Sirsa, from where the first discovery of stone artifacts was made after the partition of the Punjab, is otherwise known as the Nalagarh Dun. Out of the three terraces in this valley (70, 40, 10 feet) the top two are implementiferous. The implements are small sized pebble-choppers, scrapers, points, knives, borers, discoids and blade-flakes. Excepting the choppers, the other types of artifacts are mostly on flakes struck out of both prepared and unprepared cores. The chief raw material is the quartzite pebble. Although initially D. Sen (1955) equated this industry

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with the Early Soan of West Punjab, later works which revealed many more interesting data, tend to show its closer affinity with the Late Soan." The problem of Late Soan is, however, complicated because of its alleged association with the Peninsular and the Central Asian Middle Palaeolithic. We will deal with it in Chapter 7.

"The river Sirsa flowing in S. S-E to NW direction has the terraces on its right bank and the Upper Siwalik formations (the Tatort, the Pinjore and the Boulder-Conglomerate) on its left. Its left bank is in a process of heavy erosion and the terraces on its right bank are highly desiccated and denuded. There is little doubt that the present course of the Sirsa is fairly young which took shape due to the formation of the Jhajra-Sirsa anticline (within the valley) resulting in the bifurcation of the once single stream. The supply of water to Jhajra, one of the principal feeders of the Ghaggar (the Vedic Saraswati), being thus severely curtailed, among other reasons, probably led to the gradual drying up of this non-perennial river in its lower reaches, towards the later half of the 1st millennium B.C. However, the orogeny responsible for the formation of this anticline must have fissured the barrier formed by the Siwalik and older rocks near Nalagarh, thus providing an opening and facilitating the capture of the new stream, Sirsa by the Sutlej. All these lead to one conclusion: that, the present course of the Sirsa being late, the terraces on its right bank can not possibly be assigned to its aggradation. When initially the new channel of the Sirsa had to erode through the softer beds of the Siwaliks on its left bank, the foot-hill slope on the (T1) right had already assumed its terrace-like feature due to accumulation of fan out-wash and slope debris of colluvial nature as a result of quaternary climatic fluctuations and tectonic disturbances. At this stage one doubts whether the river was capable of any large-scale aggradation within the valley. It could only drain the area through numerous choas and gullies and establish a course along the srtikes of softer Siwalik beds.

Terrace 1 (3rd Interglacial) :—There is at least one clear evidence that the undisturbed deposits of the terraces are late Pleistocene in age. It is attested by an instance in the valley where the Dagshai beds have been pushed up over the alluvial clays and conglomerates. This disturbance must have taken place after the clays and conglomerates were laid in horizontal beds within the dun. That these clays and conglomerates are post-Siwalik deposits is attested by the evidence of another sub-recent disturbance recorded between the Beas and the Sutlej, near Hoshiarpur where the Upper Siwaliks have been over-thrust on to almost horizontal older alluvium of the Indo-Gangetic deposit. The Upper Siwalik Boulder-Conglomerate being 2nd Glacial in age, the disturbed clays and conglomerates in the dun, which post-date it, will belong to the 2nd Interglacial at the earliest and the disturbance, therefore, could be during the ensuing glacial period (3rd Glacial). The T1 in the dun, which shows no faulting or folding of its deposits, is definitely younger than this disturbance and, therefore, can be dated to the next phase, *i.e.*, the 3rd Interglacial, which is further borne out by the colluvial nature of the deposits. Two major fan-deposits, the first derived from the Upper Siwalik Boulder-Conglomerate during the 2nd Interglacial, and the second during the 3rd Interglacial have been noted in the valleys of the Himalayan foot-hills. The character and deposition of T1, as noted above, lead to the conclusion that the origin of this terrace can be ascribed to the latter of the two interglacial fan out-wash.

Terracec 2 (4th Glacial) : —The next terrace, T2, has been formed by the narrowing of the channel due to the onsetting of the 4th Glacial condition and its subsequent swaying to the left. This terrace has a layer of coarse gravel at its base succeeded by sand and silt, and finally capped by a huge deposit of unconsolidated gravels. That a part of this deposit is post-glacial is indicated by the very late radiocarbon date of a fossil elephant tusk found from one of the sandy pockets between the gravel layers. The top gravel layer containing fair quantity of silt resembles the post-glacial out-wash. In the ploughed fields on this terrace Soanian artifacts are found which have been derived from the upper terrace. In addition to these, a Neolithic polished celt and numerous antiquities from protohistoric Harappan to late medieval period have been found on this terrace.

Terrace 3 (Post-glacial) :--This terrace, found in the flood-plain, is a recent alluvial formation. Being only 10 feet high from the level of water in the channel, it is subjected to inundation during the monsoon.

RAVI-CHENAB VALLEY

Soanian pebble-tools, small flake-tools based on siliceous raw materials, and polished stone celts, similar to those found in the valley of the Beas, have been recorded from several sites located on the high river terraces in the Jammu area (Mohapatra and Saroj 1968-69). These, terraces are observed within the longitudinal valleys (Duns) oriented roughly in east-west direction. Being bounded in the north by the Sub-Himalayan range and in the south by the Siwaliks, these valleys are drained by rivers like the Ravi, the Tawi (a major tributary of the Chenab) and their tributaries. The terraces found on their banks within the valleys are little different from those of the Beas around Haripur-Guler, as regards composition and configuration. At the outlet of the valleys similar terraces yielding Stone Age artifacts are also found. When the two series of terraces are correlated, a picture of the pleistocene sedimentary cycle emerges which stands close comparison with the neighbouring area to the east (the Beas Valley) as well as to the west (the Indus-Soan Valley). A sequence of five terraces is observable in this area, the top four of which are implementiferous. They occur at Udhampur and Nagrota on the Tawi, Basoli and Lakhanpur on the Ravi and Akhnoor on the Chenab (Fig. 7.2).

Terrace 1 (2nd Interglacial) :—Like the T3 at Guler (Beas Valley) the first terrace inside the duns in Jammu region is sometime found to have developed directly over the Middle Siwalik (Dhok Pathan) beds at places like Basoli on the Ravi and Nagrota on the Tawi. But in most other places within the dun or at its outlet this terrace has been cut into the tilted surface of the Upper Siwalik Boulder-Conglomerate fan. The process of re-deposition

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of the Boulder-Conglomerate as fans and its subsequent erosion can be dated to the 2nd Interglacial. The height of this terrace ranges from 435 to 400 feet.

Terrace 2 (3rd Glacial) :-During the subsequent climatic change the valley was trenched and re-filled with fresh gravels which is homotaxial with the out-wash of the 3rd Glaciation. Over this a thick layer of yellow loessic silt (Potwar loess—nearly 40 ft. thick) was deposited towards the end of this glacial phase. This forms T2 which ranges from 300 to 250 feet in height.

Terrace 3 (3rd Interglacial) :-During the 3rd Interglacial T2 was deeply cut up to the basal gravel, giving shape to T3, which is now found at heights between 180 to 100 feet from the level of the river.

Terrace 4 (4th Glacial) :—This terrace, which ranges from 65 to 25 feet in height, also has a basal gravel-bed topped by a thin layer of loam. This is the glacial outwash of the final pleistocene.

Terrace 5 (Post-Glacial) :—The low terrace found in the flood-plains of the rivers is the same recent alluvial formation as seen in the Beas and the Sirsa valleys.

As has been stated above, different types of Stone Age artifacts are found on the first four terraces. All but one, the implementiferous localities are devoid of stratigraphic contexts for the tools. The place with stratigraphy is situated nearly five kilometres upstream from Akhnoor on the Chenab. At this place half a dozen flakes were found from the lower part of the loessic silt of T2. These flakes comprise the Late Soan B which flourished during the 3rd Glacial. Keeping this evidence as a fixed point in the chronology of the lithic industries in the Jammu area, the loose surface collections can be dated on the basis of typo-technological comparisons indicating earlier or later trends. The well known Early Soan type of tools found in this area, of course, do not pose much of a problem for dating. Specially, taking note of the situation of Jammu, midway between the west Punjab and Himachal Pradesh, its Early Soan industry can be safely dated to the 2nd Interglacial as it is in the Potwar region to its west and the Valley of the Beas to the east. The next industry is that found near Akhnoor in a stratified context. This is Late Soan B of the 3rd Glacial. Artifacts of this industry occur intermixed with the other ones, mostly on T2 and T3. The small flake-tools displaying very late lithic traits are surely younger than the Late Soan. A similar industry in the Beas valley has been provisionally dated to the 4th Glaciation.

KASHMIR VALLEY

From the valley of Kashmir at Pahalgam, on the Liddar, a very ineresting flake-tool has been reported from the 2nd Glacial Boulder-Conglomerate(?). Over this boulder bed occurs a huge deposit of silt, presumably laid during the 2nd Interglacial. A so-called handaxe was also found (Sankalia 1974) from the junction of the Boulder-Conglomerate and the overlying silt. Sankalia holds that the flake-tool found at the bottom of the Boulder-Conglomerate may be ascribed to a period earlier than the deposition of the boulders; therefore, probably 1st Interglacial in age, and the alleged handaxe recovered from the "earliest clay phase" should belong to the 2nd Interglacial. At two other localities two small scrapers, one on a flake and the other on a nodule, were found more or less from the same horizon as the handaxe. Sankalia also reports the discovery of a few artifacts from the horizon datable to the period between the two Interglacials, *i.e.*, the 2nd Glacial. One is a two-edged scraper on a triangular pebble-chunk and the other is a pebble-chopper found *in-situ* in the exposed glacio-fluvial deposit on the right bank of the Sind at Prang. From the morainic deposit at Sonmarg, a pebble scraper-chopper and from a mound overlooking the right bank of the West Liddar a large borer were found which are also supposed to be 2nd Glacial in age" but we are not at all sure.

SOME RECENT WORK

After Agrawal et al

"The Kashmir valley (33°30′—34°45′ N & 74°—75°30′ E) is confined on the northeast by the Himalayan range and on the southwest by the Pirpanjal. The valley itself has an elevation of less than 1800 m. The importance of the valley for Quaternary studies has long been recognized, though the only major work published upto date is De Terra and Patersons' monumental book (1939). Subsequent efforts to study the Quaternary formations of Kashmir have been sporadic rather than systematic (Farooqi & Desai, 1974; Bhatt, 1975, 1967; Joshi *et el*, 1974).

The valley provides a complete Sedimentary record of a Pleistocene lake. In fact, one can cleary distinguish lacustrine, glacio-fluvial and aeolian species of the sediments. Due to tectonic uplift and the draining out of the lake, these sediments are well exposed for study. Our reconnaisance studies convinced us that to properly understand the events that led to the formation of these sediments we will have to use a multipronged approach. The Quaternary environmental changes will lead one to the palaeoclimatic fluctuations that caused the former. But how did it effect early man ?

Was there early Palaeolithic man at all in Kashmir? Some tools were reported by Sankalia (1969, 1971) and his colleagues, from the Liddar valley, near Pahalgam, though many secptics do not believe them even today. These discoveries distinctly raised the possibility of the early Palaeolithic man having lived in Kashmir. Of course, from the Neolithic period onward the story is better documented.

Upper Karewas

In the present field-trip we surveyed the valley extensively to select suitable sites for sampling. Though we examined the Lower Karewa (LK) exposures around Malshahibagh and Shupian areas, we concentrated more on the Himalayan Range Upper Karewa (UK) formations. The best preserved UK exposure was located at Seki Paparian, near Bijbihara, which gave us a complete section (Fig. 7.3) starting from the LK layers. It provided a continuous sequence of sediments up to a height of about 64 m. Another important and well preserved section was located at Olchibagh near the Modern Lime Kiln, a few kms from Pampur. At Sombra the Lower Karewa formations are exposed and the stratigraphy can be extended up to Olchibagh where only UK formations are visible. We took advantage of the extensive rain gullies for studying the stratigraphy of these formations. We will confine our observations here to the UK formations only.

Near the Avantipur canal at Seki Paparian, were exposed the Lower Karewas over a very short stretch ($\sim$50 m) (bottom upwards): bluish clays, alternating wavy bands of clay and sand, cross-bedded green sand, topped by a calcareous sandstone (marl ?). Beyond 50 m, on either side, the section shows either erosion or faulting, as the UK formation occurs over it only unconformably. The lithology of these sediments and the probable faulting may assign them an LK age. The total height of the UK deposits would be about 9 m.

The Upper Karewa sediments are marked by alternation of sand, silt, clay and marl. Probably the sand layers represent glaci-fluvial episodes and the laminated silt and clays lacustrine deposition. Marl perhaps

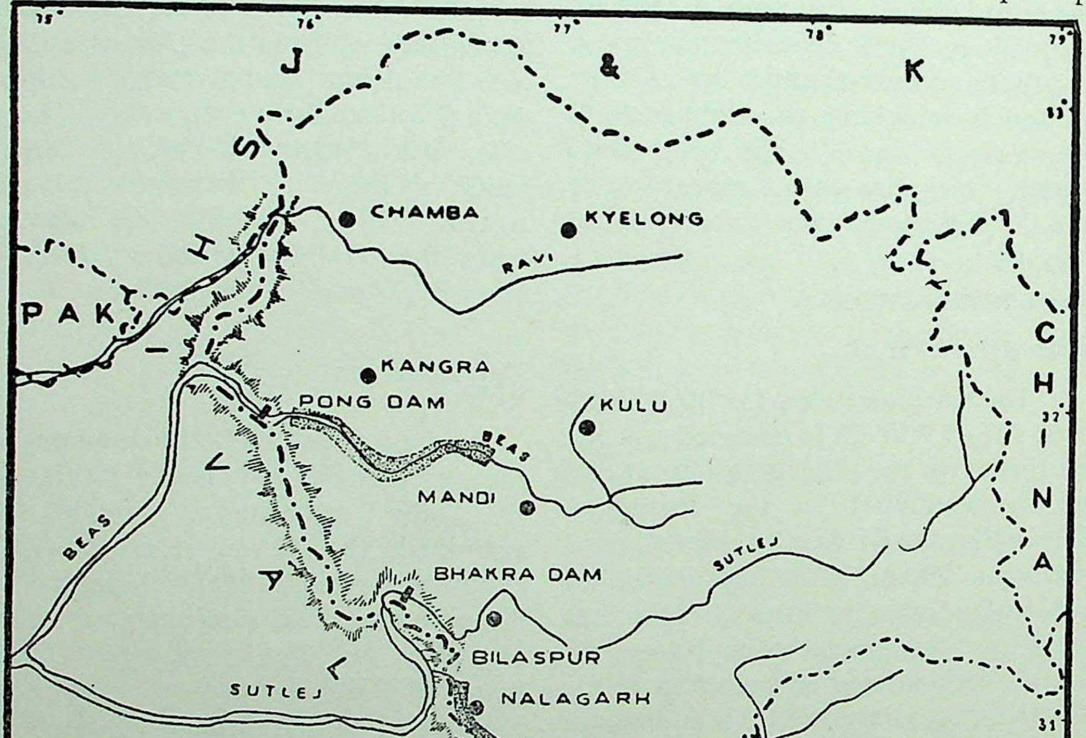
75°
76°
77°
78°
79°
33°
32°
31°
30°
J & K
CHAMBA
KYELONG
RAVI
PAK
KANGRA
PONG DAM
KULU
BEAS
MANDI
BEAS
C H I N A
SUTLEJ
BHAKRA DAM
BILASPUR
SUTLEJ
NALAGARH
P A N J A B
CHANDIGARH
AREAS EXPLORED
U P
GHAGGAR
YAMUNA
H A R Y A N A
0
30
KM

Fig. 7.2. Map of Himachal Pradesh showing explored area and sites. *After Mohapatra*

represents drying of lakes at various intervals when the salts got concentrated. We hope to be able to date these marls by U/Th. A large number of palaeomagnetic samples were collected so as to cover all the significant geomorphological or depositionary events. The total heignt of the UK formations here is about 44 m.

The UK are topped by a 11 m thick loessic, unstratified deposit. It is marked by two palaeosols of 2-3 m thickness. At the bottom of each palaeosol, there is a concentration of kankar nodules. Samples for pollen, palaeomagnetic stratigraphy, ^{14}C and sedimentological studies were collected.

Very near the Modern Lime Kiln factory, 8 km from Pampur, is Olchibagh. A 38 m deposit of the UK and loess is exposed here due to a ravine. No LK deposits are exposed at this site. But with further work one can correlate the Sombra LK sequence with the Olchibagh UK stratigraphy.

The UK are marked here also by lacustrine sediments of silt and clay and glaci-fluvial sand. At irregular intervals there are marl layers. It may be pointed out here that though Seki Paparian and Olchibagh are separated only by a distance of 30 km, there is considerable difference (15 m) in the total height of the deposits at the two sites: at Olchibagh UK are only 30 m and at Seki Paparian 44 m. The loess has a thickness only of 8 m.

These differences in the preservation of sediments make the task of long distance correlation very difficult, unless we have radiometric, TL or palaeomagnetic chronological markers.

Loess

The loessic deposits are ubiqutious in the valley and form a 8-10 m thick mantle over the exposed UK formations. They have distinctly two palaeosols; the third on the top is difficult to distinguish because of the present day humus. Our initial studies on these loess deposits, using SEM and ^{14}C, have already indicated that the palaeosols represent regimes of greater humidity and are datable to *c.* 10,000 and *c.* 30,000 B.P. (Pant *et al* 1977).

The presence of the Neolithic sites on the loessic deposits has created some confusion. De Terra and Paterson ascribed the loess a historical date (1939) and Bhatt and Chatterji (1976) tried to explain their predicament by invoking an older loam on the Pir Panjal side and a younger one on the Himalayan side ! We would like to make it clear here that the Neolithic habitations are on the *top* of the loess and not *inside* it. The geologists have confused the sterile loessic deposits with the habitational debris of the Neolithic culture. The loess is older than *c.* 8000 B.P. and the Neolithic cultures younger than *c.* 4500 BP. Secondly, if the loess is an aeolian deposit it will cover all the earlier formations in the valley uniformly. Therefore it has to top the 'upper loam' on the Pir Panjal side also. With our further work we hope to firmly date the loessic deposits and also delineate its climatic fluctuations. At this stage, one can rule out a post-Pleistocene age of the loess, as suggested by de Terra and Paterson (1939). It is a late Pleistocene deposit which stopped depositing around the beginning of

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Holocene. Preliminary ^{14}C dates would suggest a maximum period of the deposition of loess to *c.* 50,000-8,000 B.P.

Fossils

Some fossils were collected from UK deposits of Burzahom and their identification is awaited. A rich fossil site, with the remains of a big animal (elephant?) was discovered at Pahalgam in a lateral morainic deposit. Further studies on these fossils are on at the Wadia Institute.

Archaeology

Most of the Karewa tops were occupied from the Neolithic times onwards. A few Neolithic and Kushan sites were also discovered. For example, the top of Seki Paparian has a Kushan occupation.

We explored the Lidder valley also but could discover only pseudorphs and no real tools, though palaeoliths have been reported from this area earlier (Sankalia 1971).

On the Pirpanjal side, however, we did find a palaeolithic site of Chopper-Chopping complex. The tools comprised choppers and some massive discoids, scrapers. The artifacts were discovered on the top terrace of the River Rembiara, at Balapura, though not from a stratified context. The extensive working on the artifacts marks them clearly as artifact

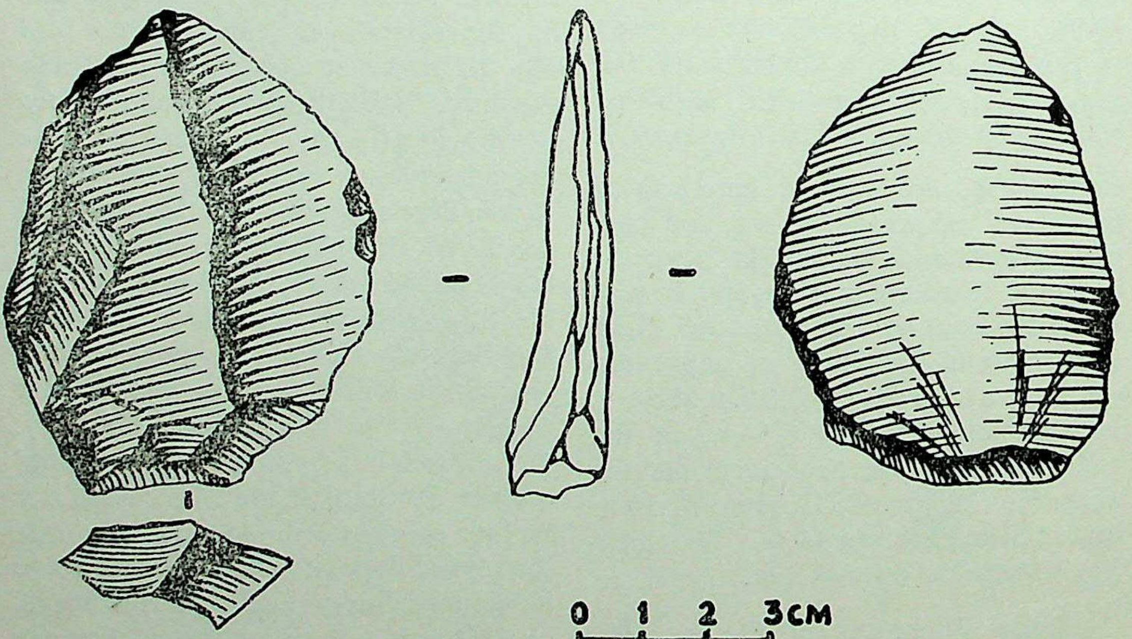

Fig. 7.3. A Lower Palaeolithic flake from surface collection, Karatau range

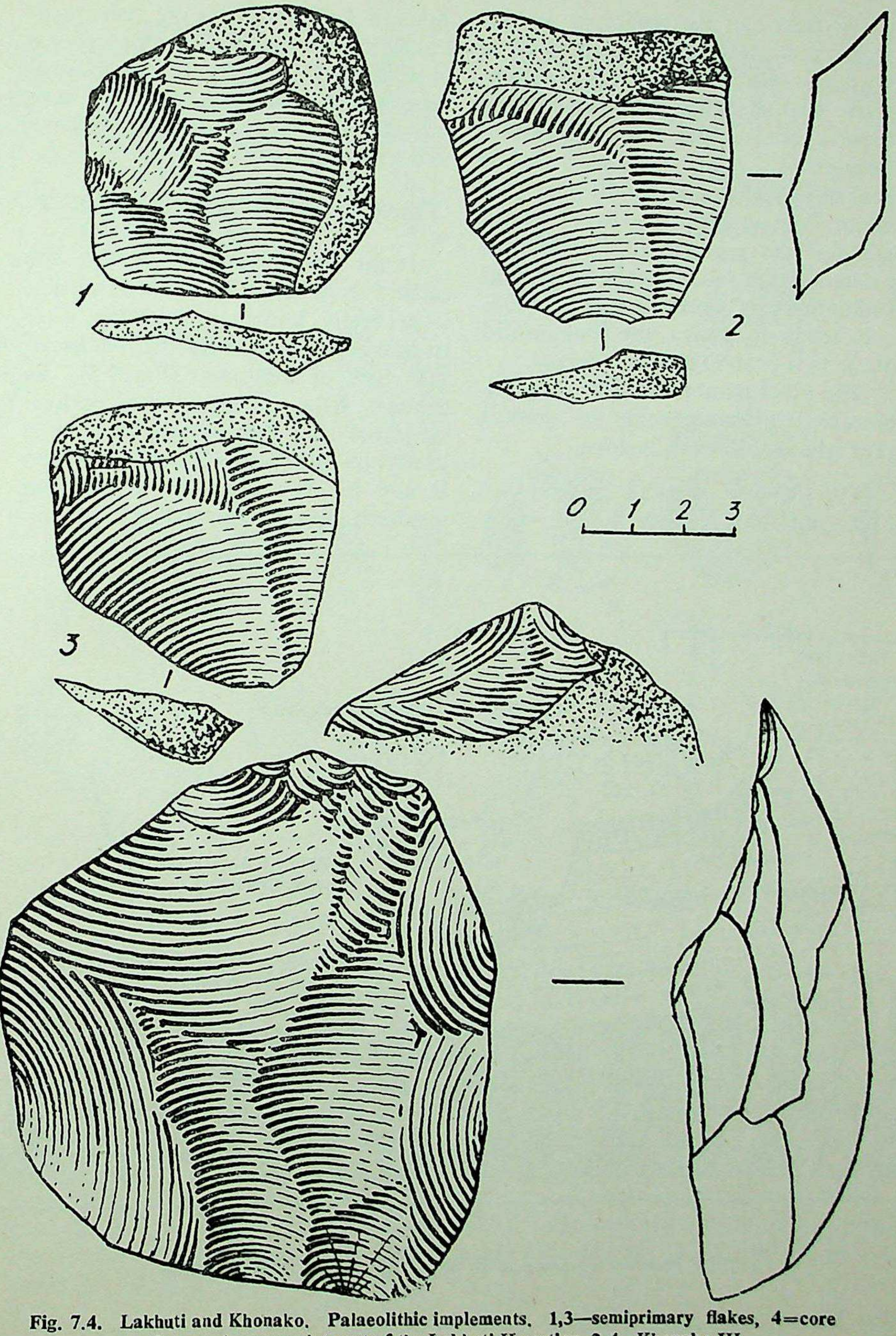

Fig. 7.4. **Lakhuti and Khonako. Palaeolithic implements. 1,3—semiprimary flakes, 4=core or cleaver. 1—new point east of the Lakhuti II section, 2-4—Khonako III**

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At least one can conclude at this stage that Palaeolithic man lived in Kashmir and that the loess is a uniform 8-10 m thick late Pleistocene mantle over most of the Karewa formations. This loessic deposit probably depicts arid conditions. Two major episodes of relatively humid climate are represented by the two palaeosols in the loessic sequence. Preliminary ^{14}C dating of the palaeosols tends to assign the aeolian-arid phase to a post-50,000 B.P. period.

The exact nature of such contacts, however, will emerge only in coming year when more work is done.

The above quated works of Mohapatra and Agrawal amply show that in India we have the remains of Palaeolithic cultures in definite geological contexts, mostly Upper Pleistocene, as in Central Asia. They may now be correlated with the Potwar and Central Asian sequences.

FIRST STAGE OF DEVELOPMENT

In the Indo-Pakistani context the earliest stage of the Palaeolithic culture is generally known as the Soan, after its first identification on the banks of the river of that name (Fig. 7.5). In Central Asia, however, the earliest stage of the Palaeolithic culture is known as Borikazgan, designated by Ranov in 1964 after the type-site in southern Kazakhstan. The tool re-

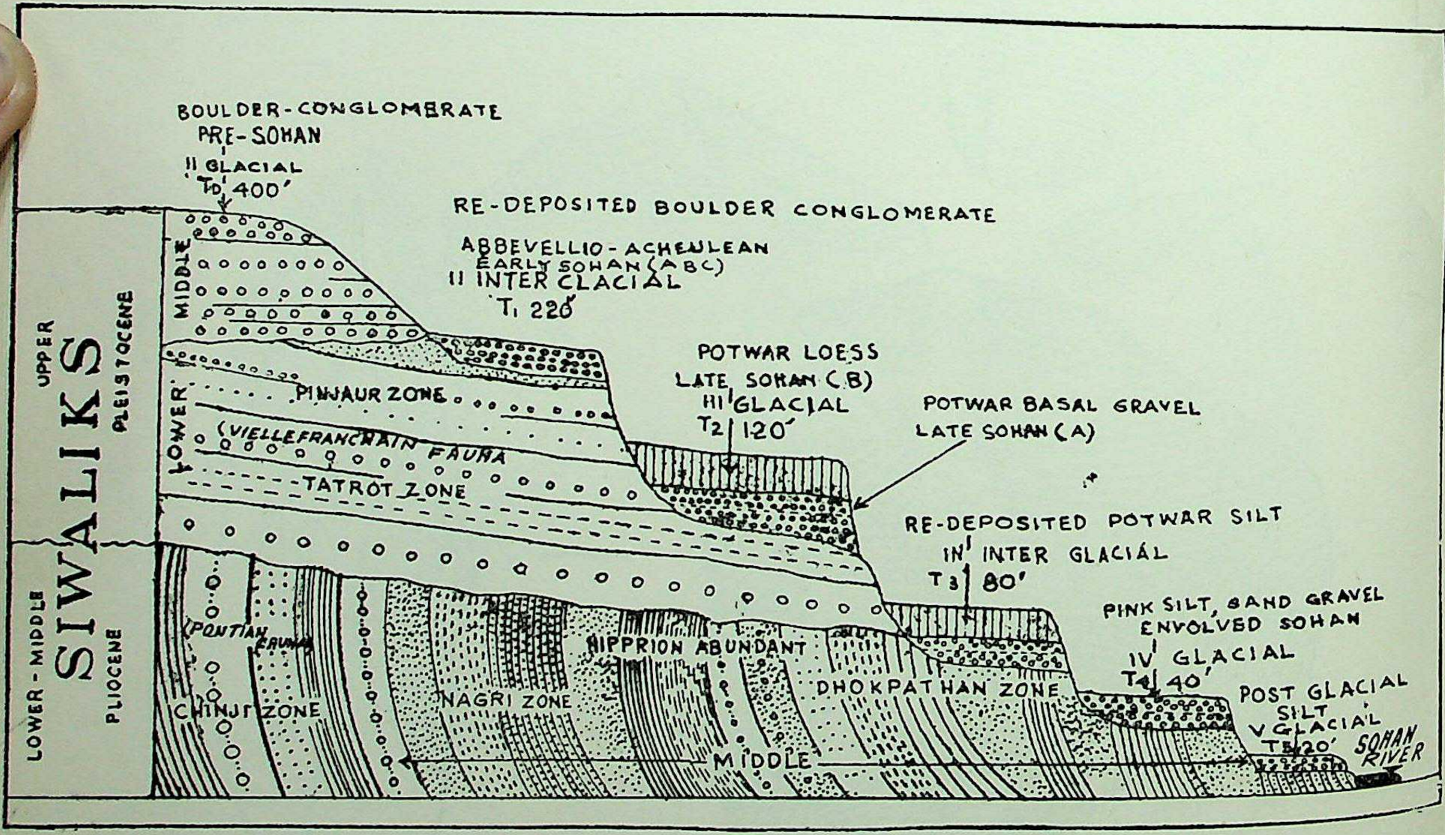
BOULDER-CONGLOMERATE
PRE-SOHAN
II GLACIAL
T0 400'
RE-DEPOSITED BOULDER CONGLOMERATE
ABBEVELLIO-ACHEULEAN
EARLY SOHAN (ABC)
II INTER GLACIAL
T1 220'
POTWAR LOESS
LATE SOHAN (B)
III GLACIAL
T2 120'
POTWAR BASAL GRAVEL
LATE SOHAN (A)
RE-DEPOSITED POTWAR SILT
III INTER GLACIAL
T3 80'
PINK SILT, SAND GRAVEL
ENVOLVED SOHAN
IV GLACIAL
T4 40'
POST GLACIAL
SILT
V GLACIAL
T5 20'
SOHAN RIVER
UPPER
SIWALIKS
PLEISTOCENE
LOWER-MIDDLE
PLIOCENE
MIDDLE
LOWER
PINJAUR ZONE
VIELLEFRANCHAIN FAUNA
TATROT ZONE
PONTIAN FAUNA
CHINJI ZONE
NAGRI ZONE
HIPPRION ABUNDANT
DHOKPATHAN ZONE
MIDDLE

Fig. 7.5. Pleistocene terraces on R. Soan. *After De Terra and Paternson*

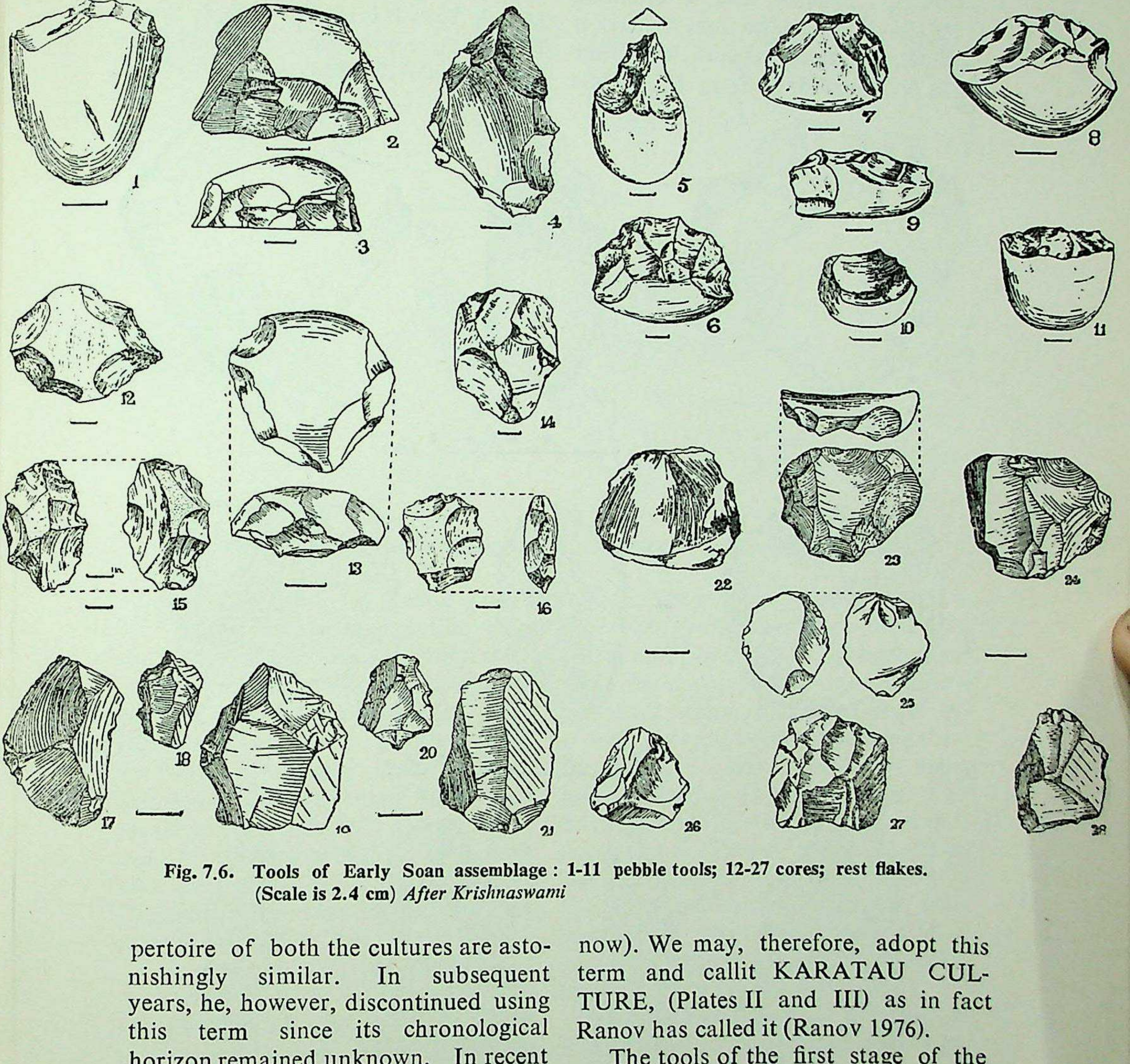

Fig. 7.6. Tools of Early Soan assemblage : 1-11 pebble tools; 12-27 cores; rest flakes. (Scale is 2.4 cm) *After Krishnaswami*

pertoire of both the cultures are astonishingly similar. In subsequent years, he, however, discontinued using this term since its chronological horizon remained unknown. In recent years Lakhuti I (Fig. 7.3.) Karatau I (Fig. 7.4) and have given a really reliable stage to the Lower Palaeolithic with Chopper-Chopping complex going back to the late-Middle, rather Upper, Pleistocene (Pedocomplex VI (top) dated to 200,000 150,000 years from now). We may, therefore, adopt this term and callit KARATAU CULTURE, (Plates II and III) as in fact Ranov has called it (Ranov 1976).

The tools of the first stage of the Soan, known as Early Soan (Fig. 7.6), were originally divided into three groups on the basis of patination and the stage of wear. De Terra and Paterson (1939), however, saw in them three successive stages (A—C) of development.

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Recently, Paterson and Drummond (1962) have divided the same collection from the Upper Terrace (T1) in Middle Soan A and Middle Soan B; Middle Soan A is similar to Early Soan A but Middle Soan B is similar to Early Soan B and C, collectively. Paterson and Drummonds' division is akin to the

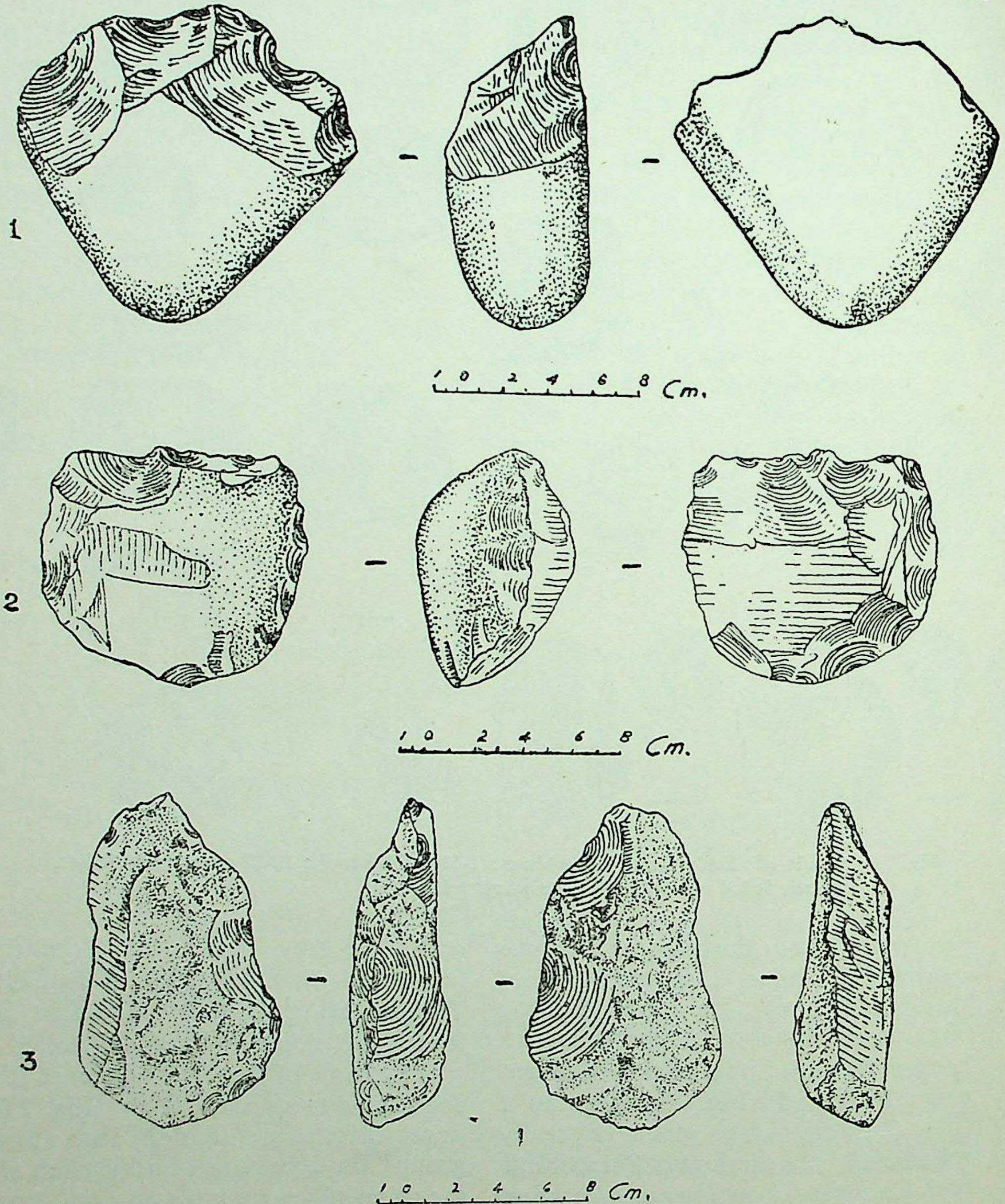

1
1 0 2 4 6 8 Cm.
2
1 0 2 4 6 8 Cm.
3
1 0 2 4 6 8 Cm.

Fig. 7.7. Palaeolithic tools from Guler. 1 pebble Chopper ; 2 pebble Chopping tools; 3 pebble-Handaxe. *After Lal*

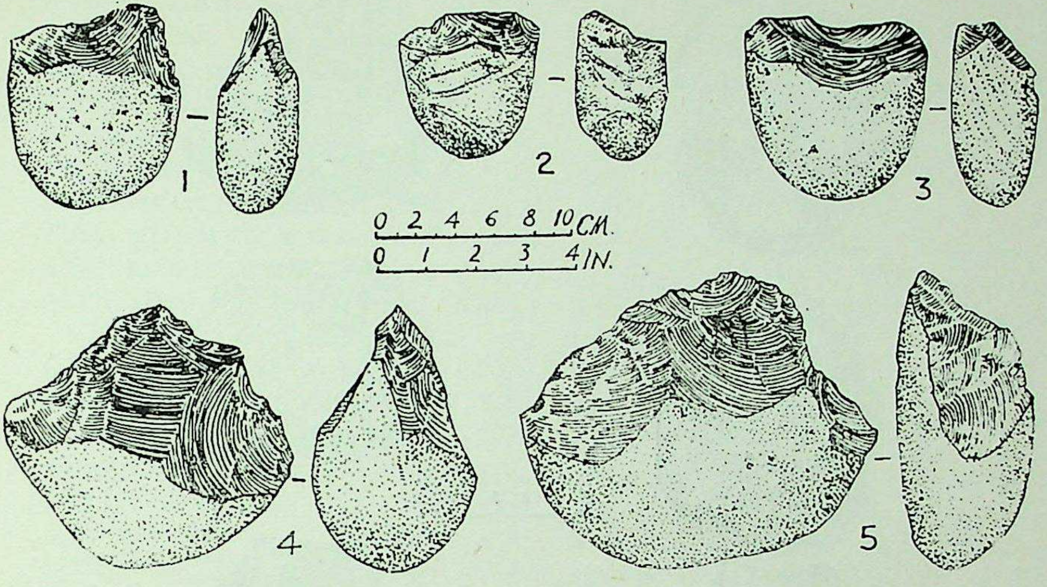


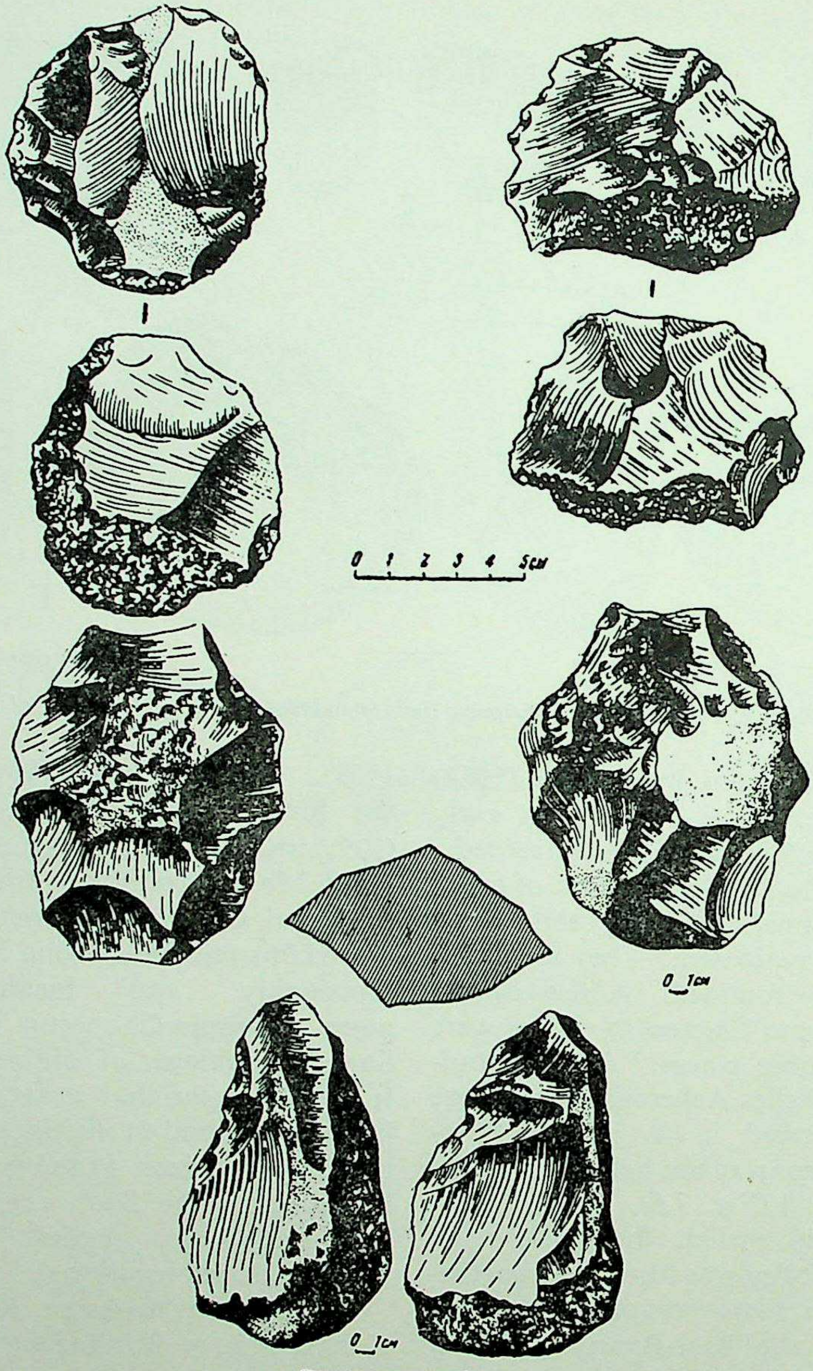
Fig. 7.8. Pebble Chopper-Chopping tools from Bilaspur, Kangra. *After Lal*

division attempted by Ranov (1964) for Central Asia, as far as this early stage of the Palaeolithic is concerned.

The Early Soan A consists of crude pebble Chopper-Chopping tools, often rolled and patinated. They are either flat based or rounded. A few discoidal cores and Clactonian flakes were found at some places. A few handaxes of Chelles-Acheulian type were also discovered in a non-Chopper-Chopping context but belonging to the same horizon (Fig. 7.6).

As noted earlier, the evidence of the Soan Valley was further strengthened by the discovery of tool-bearing terraces in the Beas-Banganga Valley (Fig. 7.1) by Lal (1956) and Mohapatra (1966). T1 of this valley consisted of pebble Chopper-Chopping tools and a few Clactonian flakes. Almost similar is the picture in the Sutlej basin at Bilaspur (Fig. 7.8) explored by Krishnaswami and the present writer (Lal 1963). The story is found repeated in the Sirsa valley explored by Prufer (1951) and Sen (1955). In recent years G.C. Mohapatra and his students (personal communications) have explored this region—around Nalagarh—thoroughly and located many more Chopper-Chopping sites with Soan assemblages of different stages. It may be noted that a few handaxes have been found at distinct points in the same horizon as the pebble tools but only in the Soan region (1964), and the Pinjor region (Mohapatra 1978, n. d., explorations).

In the Central Asian Republic of Kazakhstan, at Borikazgan and Tanirkazgan there is a predominance of 'roughly cut' implements of the Chopping type which are rolled and covered with patina. They are made from pebble and flint nodules and are often quite shapeless. The collection includes just a few handaxes, and cores,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1
0 1 2 3 4 5см
0 1см
0 1см

Fig. 7.9. Pebble tools from Little Karatau region (Borikazgan stage), southern Kazakhstan

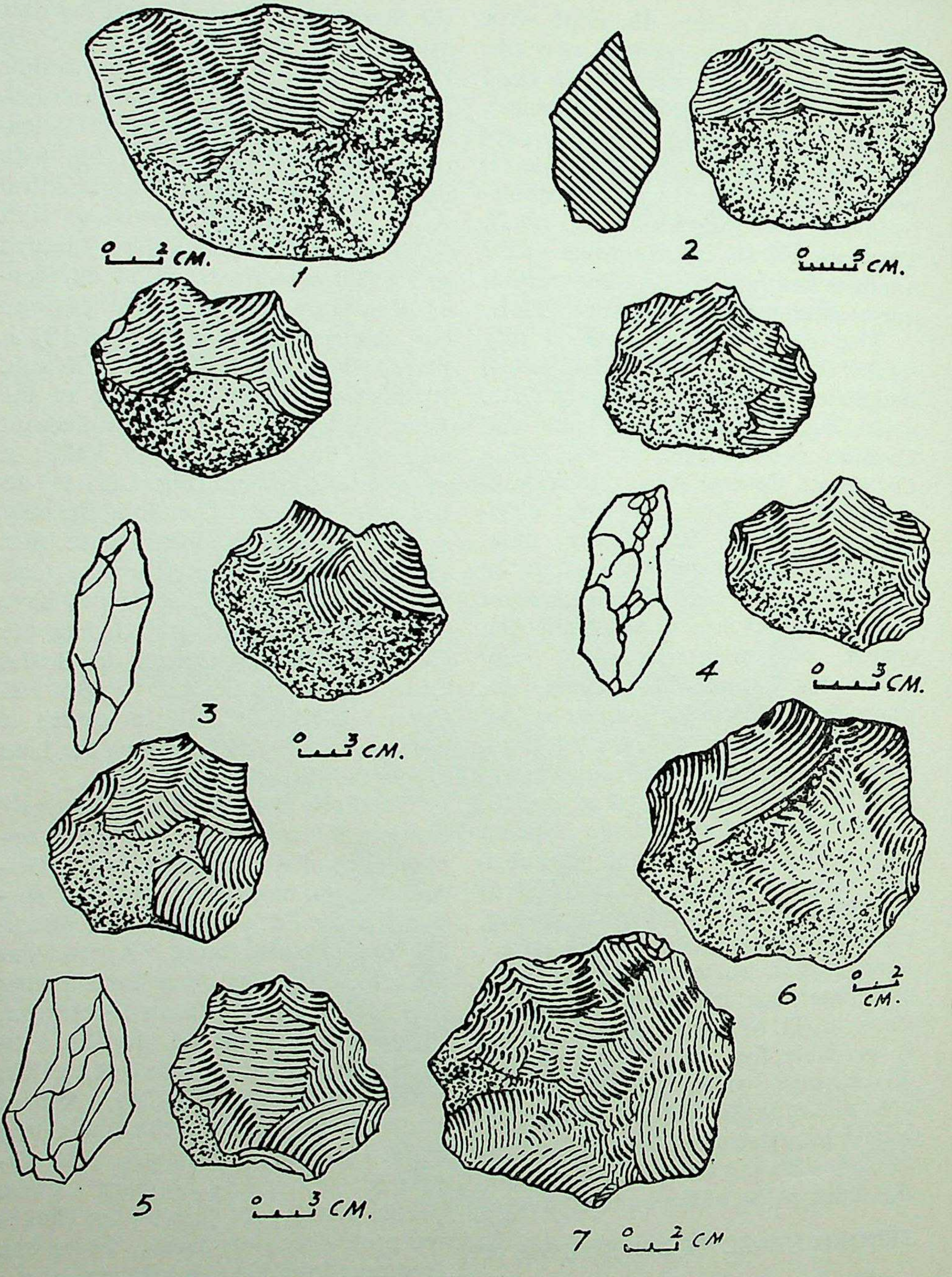
the latter are mainly discoidal, with flakes removed from one or opposite sides. There are some small sized 'chopper handaxes' (Fig. 7.9 bottom). The chopper-handaxes, however, are not handaxes; they are unifacial or bifacial pointed pebble tools, like Lal's 'pebble-handaxes' from Banganga (Fig. 7.7-3). They are not the Bifacial tools of the handaxe family employing the technique of alternate flaking (Ranov 1964).

The two complexes are so very similar that at one time Ranov (1964) designated the Borikazgan (Fig. 7.10) assemblage (which we now call Karatau assemblage) as the 'Soan Culture of Central Asia'. It is probable that the Soan Culture, originating in the Beas-Sutlej basin (Gupta 1969) moved westward in the Soan region, crossed the Himalayas and then reached the Pamir-Alai system of mountains at a very early stage, somewhere during the upper-most Middle Pleistocene period. However, in order to establish Indo-Central Asian contacts firmly, we will have to find out some good sites of Karatau I tool-assemblage type in India and in a definite geological horizon which is datable to 200,000 to 150,000 B.C. On the present showing, the Soan complex has several stages, some earlier, some contemporary and some later, but it is only broadly so since no TL or any other reliable date is available for any of these stages. Nevertheless, since Karatau I has been placed in Riss/Wurm Interglacial (or III Interglacial) it can at best be related with the Late Soan B which is the latest phase of the Soan Culture.

SECOND STAGE OF DEVELOPMENT

The second stage of development of the Soan culture in India and Pakistan would be Early Soan B and C of De Terra and Paterson and Middle Soan B of Paterson and Drummond. Paterson and Drummonds' classification once went quite favourably with that of Ranov adopted for Central Asia, but with the discovery with Lakhuti I site of Pedocomplex V, dated to 130,000 years or so, with a developed Karatau assemblage, the position has changed. Lakhuti I (Plate I) is placed in Late Pleistocene or Wurm. By this time the Soan Culture in the Soan Valley had practically died out although in the Banganga Valley it may have continued (Fig. 7.11), we do not exactly know. Therefore, the only sensible conclusion appears to be that after the initial stage (Karatau Culture) when the Soan Culture may have been responsible for introducing the Chopper-Chopping Culture in Soviet Central Asia, the ties got snapped and Central Asia not only preserved it but also developed it through the Late Upper Pleistocene times.

The Early Soan B and C collectively consists of fairly fresh Chopper-Chopping tools of standardized forms. Discoidal cores, flaked all over one surface, like the Early Levalloisean discoidal cores, are also found. Apart from these, the usual Clactonian flakes having low angled simple faceted platform, 'suggesting a Proto-Levalloisean influence' are also discovered. As a rule, retouch is absent (Fig. 7.6). Almost similar is the picture in the Beas-Sutlej basin. From T1 of Banganga Lal discovered Chopper-Chopping tools, 'pebble handaxes', Clactonian flakes and proto-Lavallois flakes. From the Terraces of the Sirsa, a tributary of the Upper Sutlej, Sen and Mohapatra have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0 2 CM

Fig. 7.10. Lower Palaeolithic pebble tools from Karatau, southern Kazakhstan

discovered pebble Choppers and crude Clactonian flakes. From Bilaspur, on the Sutlej, Krishnaswami and the present writer collected crude Choppers and heavy Clactonian flakes from T_1.

Comparable picture, purely on typological basis, could be noticed at Tokali in Kazakhstan and On-Archa in Kirgizia. At one time Ranov preferred the name of Tokali to designate this stage. Here the Chopper-Chopping tools 'are somewhat smaller and more streamlined. The Tokali group is distinguished by a new form of well-cut cores of a steady shape.' Levalloisean cores are also there, although the number of examples is limited. The handaxes, so far found at Tokali, are only three in number. The Clactonian flakes are also found. Proto-Levallois flake-blades are collected in a good number. Similar artifacts are picked up at Kairagach, Isfairam Sai, Sari Arka and other places.

The above details make it quite clear that the *directional change* in the tool-typology in both the regions has been the same. But, possibly, this was the time when local raw-materials and need for particular tool types determined the contents of the new assemblages. The Central Asian post-Lakhuti I complex, which has as yet not been stratigraphically established, has to be taken as a local development.

THIRD STAGE OF DEVELOPMENT

The third stage of development of the Soan Culture in India and Pakistan

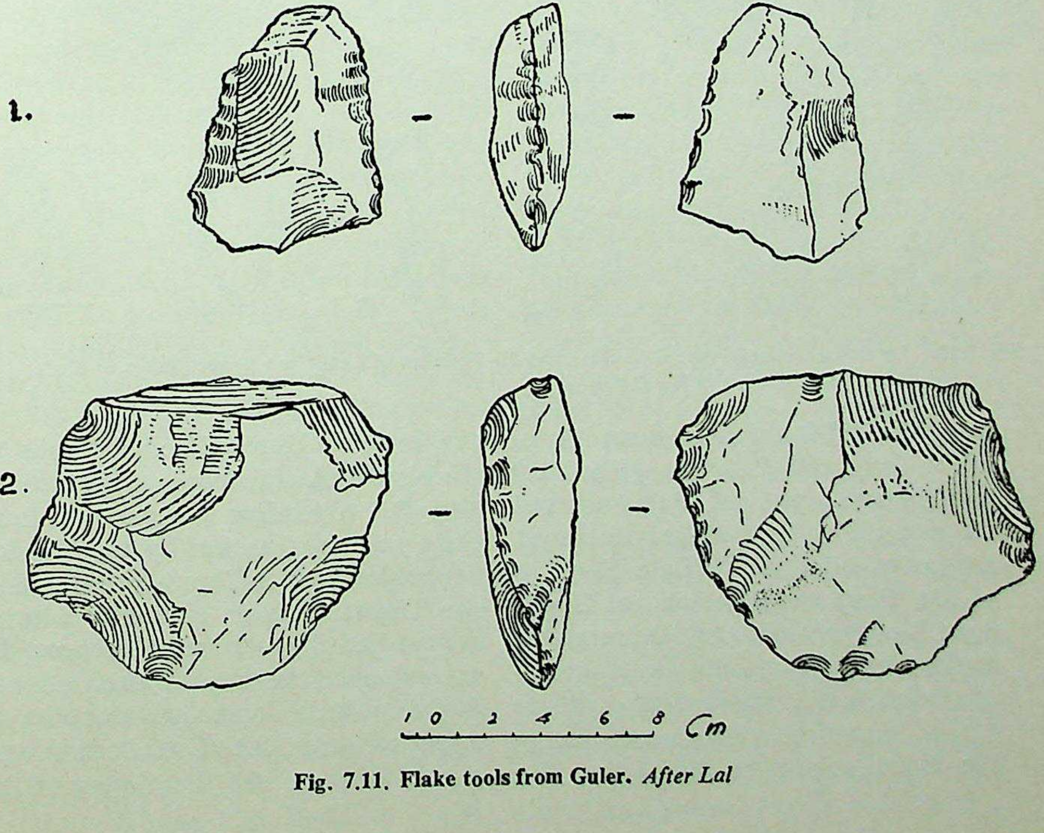


Fig. 7.11. Flake tools from Guler. *After Lal*

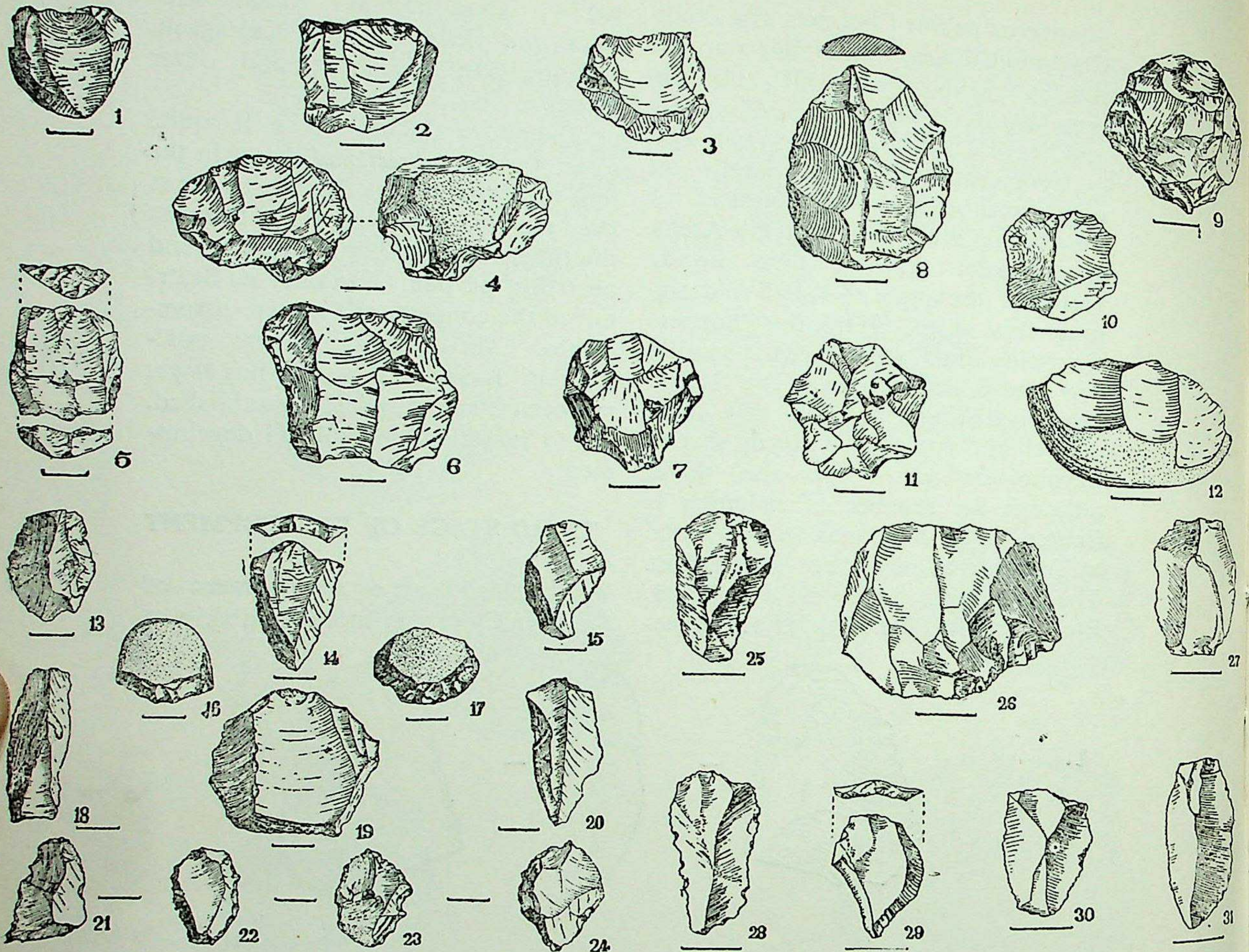


Fig. 7.12. **Late Soan assemblage : 1-12 cores and 13-24 flakes of Late Soan A; rest flakes of Late Soan B; 26 is core.** *After Krishnaswami*

is represented in the Late Soan A of of De Terra and Paterson (Fig. 7.12) and Upper Soan A of Paterson and Drummond. This stage developed and got matured in the Late Soan B of De Terra and Paterson and Upper Soan B of Paterson and Drummond. In their recent work, the latter group of workers have indicated the existence of an 'intrusive' culture-complex in the Soan region to which they give the name of 'Upper Clacton (Punjab),' divisible in A and B groups, A is older than B. According to them the Late Soan culture is marked by the presence of pebble Chopper-Chopping tools while the 'Upper Clacton (Punjab) culture' is marked by its total absence. In consequence, the latter is purely a flake-blade culture. In its time-sequence it overlaps with the Late Soan A and persists throughout the time-span of

Late Soan B, existing even slightly beyond it. The Late Soan, therefore, should be considered as a major stage in the growth and development of the Palaeolithic culture in the Himalayan zone, with several important groups of tool-technology and tool-assemblages. Within its own channel of development, it is sometime suspected that it received new elements of the cultural changes occurring in the neighbouring countries—in Afghanistan, Iran, and Central Asia. One such element was the 'Asiatic Mousterian'. In Central Asia the stage comparable to it has been termed as 'Kara-Bura', after the type-site in Tadjikistan. It belongs to the Middle Palaeolithic culture-complex, as noted earlier (Plates XIII and XIV).

The Late Soan as a whole is characterized by smaller, neater and finer Chopper-Chopping tools than those observed in the Early Soan stage. They are also rich in variety. During this stage the Levalloisean technique was greatly improved. Even the Clactonian flakes were now smaller and better shaped. The flake-blade element of the Late Soan A witnessed the form which is sometimes termed as 'Levallois-Mousteroid'. Points and scrapers, largely unretouched, were made on flakes and flake-blades of the proto-Levallois and Levallois types. "This phase shows a general resemblance to the Late Levaloisean of Europe", observes Krishnaswami. Looking from another point of view, for the Upper Clacton Paterson and Drummond observe that "this industry is of the Mousterian tradition within the Clactonian" since the Mousterian-like disc-cores form near about 30% of the collection.

From T3 of the Banganga, Lal collected Chopper-Chopping tools, Clactonian flakes with retouch and proto-Levallois flakes. From the same terrace, Mohapatra excavated Chopper-Chopping tools and flakes with prepared platform.

From the Middle Terrace of the Sirsa, Sen collected tools which exhibit predominance of the flake tools of small size. Further explorations by Mohapatra confirmed it. Scrapers, points, knives and borers are made on proto-Levallois flakes. Tortoise-like cores are also reported. From T3 of the Sutlej, Krishnaswami and the present writer collected neater and better formed pebble Chopper-Chopping tools and Clactonian flakes, than those which we got on T2.

Probably, as the late-contemporary of the Late Soan B and Upper Clacton (Punjab) are the tool-assemblages excavated by Dani (1964) at the Sanghao Cave in the Peshawar valley, Pakistan, and explored by Puglisi (1963) at Hazar Sum in the valley of the Samangan river in Afghanistan.

In the Central Asian Republic of Tadjikistan the assemblage that sometimes resembles the Late Soan B, Upper Clactonian B, Sanghao and Hazar Sum in some of their dominant traits, is found at Kara Bura. At Kara Bura small and neat Chopper-Chopping tools with finely cut surfaces, and a wide variety of other forms are found (Fig. 7.13). Other implements of the assemblage 'are perfectly developed Mousterian points, scrapers and cores, some of which are of Levallois type with faceted platform. The Mousterian points are 0.2%, scrapers 1.4%, irregular scrapers 4.8%, flake-blades 4%, blades 0.8%, chopping tools 6.4% and cores without good forms

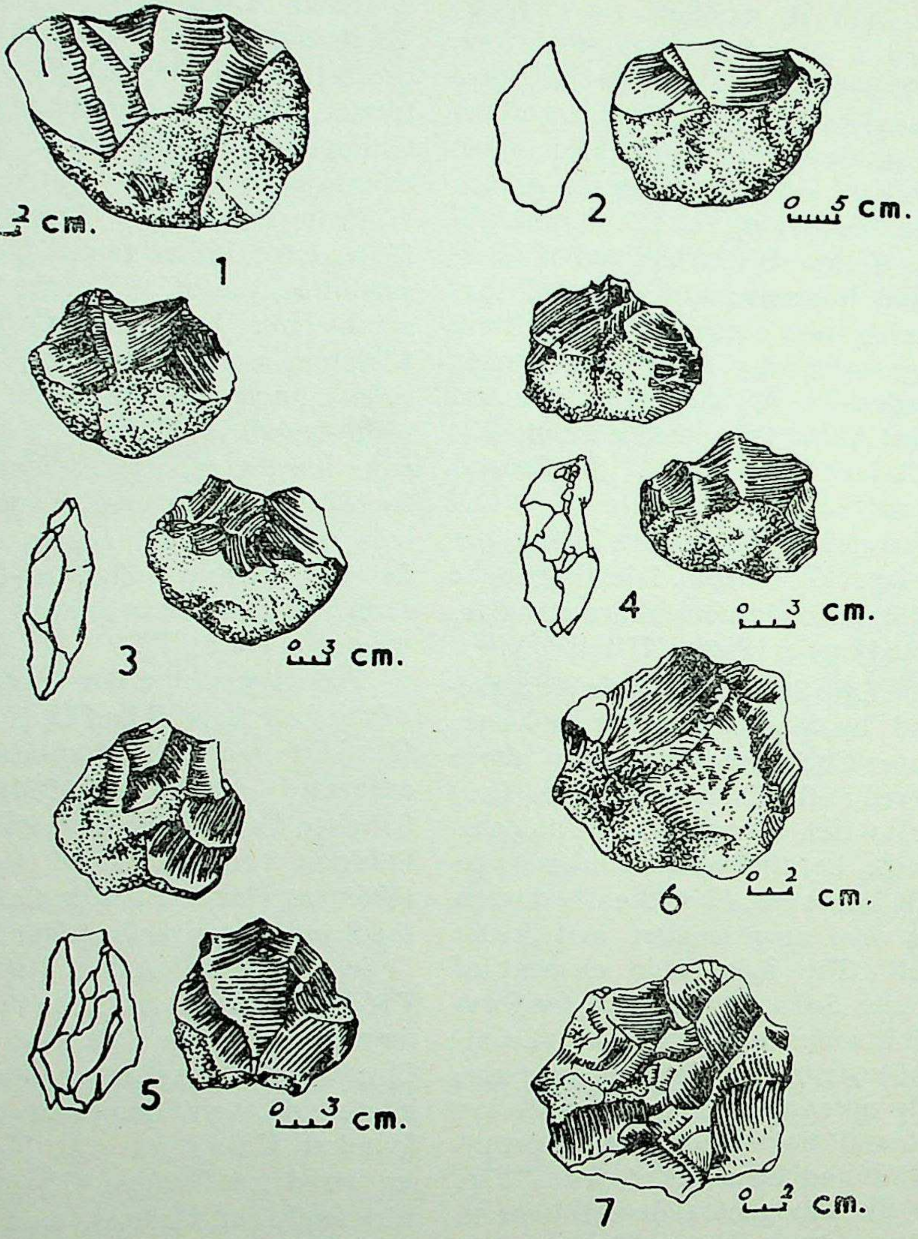


Fig. 7.13. Small pebble tools and cores from Kara Bura, southern Tadjikistan

4%. In total, 3124 tools were found in the excavations. Levallois-Mousterian tools are found in large numbers at Djar-Kutan, Karai Kom and Semiganj in Tadjikistan. They are also found at Tossor in Kirgizia. In Turkmenia they are found at Tom Chi Su, and in Krasnovodska. Uzbekistan cave-sites, like Teshik-Tash, Aman-Kutan, Khoja-Kent, Obi-Rahmat, also yielded some similar assemblages. Near Fargana there are several sites of this complex, the more important being Angrein.

The above details once again show the similarity in the tool-typology of the two regions. But, as said above, at the present stage of our knowledge we cannot categorically indicate the mechanism of the process which resulted in such a marked similarity in the tool typology of the two regions. If there is really some definite stage in India comparable with the Kara-Bura stage of Central Asia, we have not got it so far. But Late Soan B may be a good candidate for that, on grounds of resemblance in a few tools and broad-based chronology. But, it will then mean the coexistence of the Lower Palaeolithic and Middle Palaeolithic (Mousterian of East Asiatic variety) in Central Asia from the Riss/Wurm Interglacial (upper end) times. It will also mean that both the cultures developed side by side in the same geographical area (south and east). It is, however, yet to be worked out.

FINAL STAGE OF DEVELOPMENT

The final stage of development of the Soan Culture is seen in the Late Upper Palaeolithic of De Terra and Paterson or Evolved Soan of Movius or the Final Soan of Paterson and Drummond. 'The pebble tools and the discoidal cores identical with the Soan series and the flakes with convergent and parallel primary flaking are similar to those of Late Soan A'. This assemblage is, however, not so cogent as the previous ones, although some similarity can be observed here also.

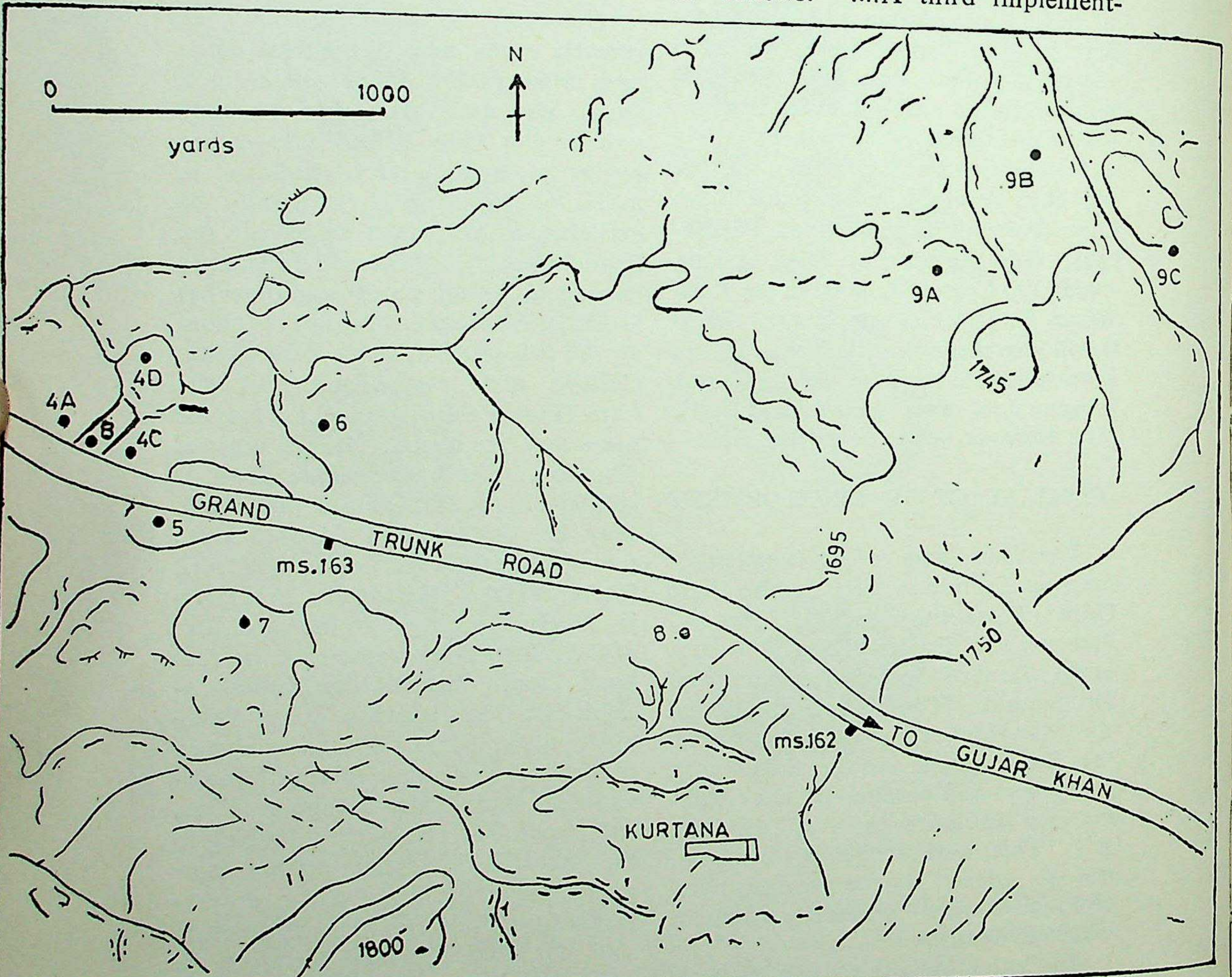
In Central Asia the final stage of the Middle Palaeolithic was once thought to have been represented at Karasu in Kazakhstan. Here typical choppers were excavated together with the implements of the final stage of the Mousterian period. But a stage comparable to in India is so far not known.

SOME RECENT DISCOVERIES IN SOAN REGION

However, within Late Soan B, recently some new discoveries have been made (Salim 1978) which, in a sense, may anticipate what we may now term as Late Palaeolithic—it has burins on flakes and blade-flakes in majority. But does it also signify the existence of the latest stage of the Soan Palaeolithic Culture? In a sense (typologically and not chronologically) Soan Lat B assemblage may be taken as the last phase of Soan Palaeolithic Culture and the beginning of the Late Soan Palaeolithic, 'Late may be somewhat like upper'. It is a curious situation indeed since Late Soan B still falls in the III Glacial (*i.e.*, Riss). May be, the so-called 'Evolved Soan, tentatively of the last Glacial (Wurm), found at Dhok Pathan and Pindigheb in Punjab, belongs to the tradition of Late Soan B and represents the real Soan Upper Palaeolithic. Soundararajan discovered about a dozen flake-blade tools, some with fine prepared platfroms, some quite long with parallel sides, some long triangular flakes, etc., from T4, obviously belonging to the last Glacial epoch on the Banganga, near a village, a km downstream from Guler. These are on chert and not quartzite and, therefore, a very significant point in favour of post-Soan phase. But this hypothesis has to be carefully examined. Also, comparisons and contrasts with the

Central Asian situation has to be clearly brought out since the Peninsular Middle Palaeolithic in India, which also includes burins-on-flakes, falls, on the present showing, within the last Glacial and Interglacial, *i.e.*, the period of post-Late Soan B. In the meantime let us record the results of the new discoveries.

In October-November 1974, Salim re-explored an area visited by Yale-Cambridge Expedition in 1935 and located a few new sites of Late Soan B—the area is around milestone 163 on the Grand Trunk Road, south-east of Rawalpindi (Fig. 7.14). De Terra and Paterson (1939) had written about it as follows: "....A third implement-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yards
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6
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9A
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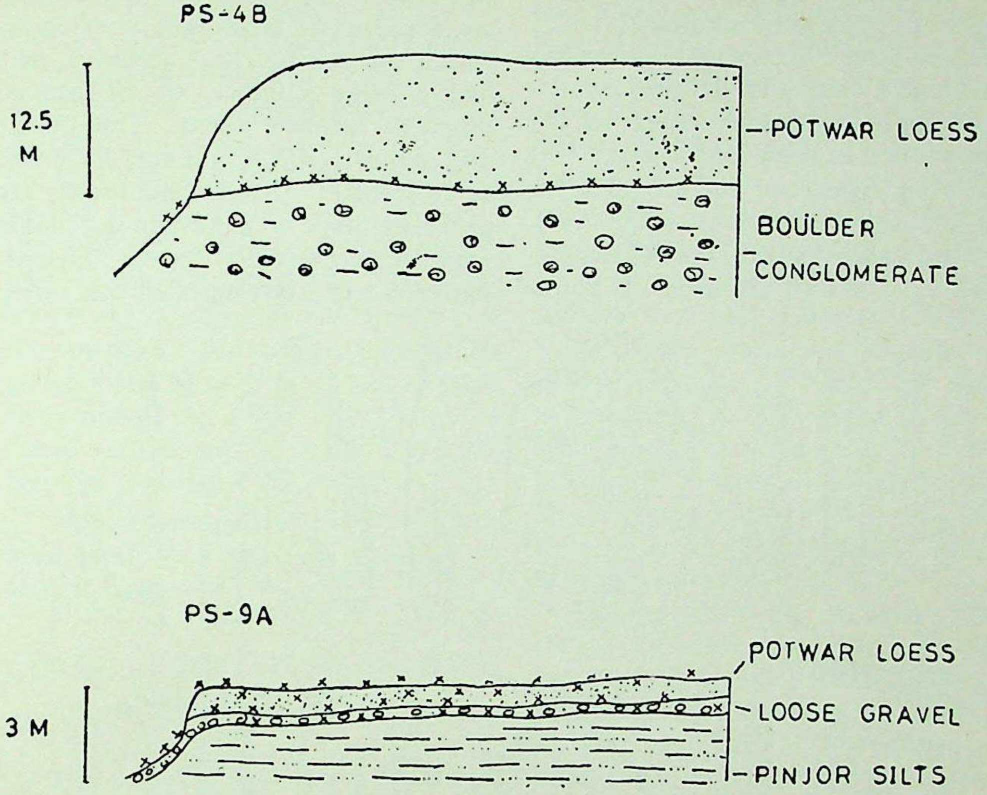
GRAND
TRUNK
ROAD
5
ms.163
1695
7
8
1750
ms.162
TO GUJAR KHAN
KURTANA
1800

Fig. 7.14. Location of Late Soan B sites. *After Halim*



Stratigraphy of sites PS-4B and PS-94. Crosses indicate artifact horizon

Fig. 7.15. Exposed Sections at PS-4 B and PS-94. *After Halim*

bearing zone appears in the lower few feet of the loess, which is here somewhat sandy. Here, from the vertical edge of the silt, we collected thin blades of greenish-grey quartzite, which represent a later stage of the Soan culture-complex, called Late Soan B by Paterson." Salim makes the following observation :

"Here the Boulder Conglomerate is overlain by the pink-yellow loessic silt which varies from 12 to 12·5 m in thickness. This Potwar Loess has been eroded in some parts by rain and the artifacts lie either on the surface of the Boulder Conglomerate or at the base of this loessic silt....Artifacts were fresh in condition. This is an undisturbed locality and is included under the Late Soan B sites by De Terra and Paterson (Fig. 7.15)." Later on he goes to explain the nature of his artifactual finds. He observes :

"Paterson studied the Soan Valley artifacts in some detail, but his terminology is not adopted here (Paterson and Drummond 1962). He recognizes 8 Soan type tools, 8 different types of cores and rest as flakes, which are not clearly defined. His typological list is not exhaustive. Besides his vague explanatory terms such as the 'Stellenbosch Invasion' and the 'Clactonian Intrusion' are rather misleading".

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"The present author at this initial stage of typological studies, classified the tools after Bordes (1961), as he has presented a long and well-defined list of 62 tool-types which cover all the forms found in these collections. The following types can be recognized in the author's collection; (Fig. 7.16), notched flakes denticulated flakes (8,9), levallois flakes (1, 2), levallois points (3), burins (4,5) and blades (6). *Burins are here identified for the first time from the Punjab*, but the previous workers who had a large number of collections failed to mention them....The burins are made on flakes and may have one or two facets. Retouched tools are generally made on flakes though blades are also occasionally found. Earlier, Paterson had suggested that there were

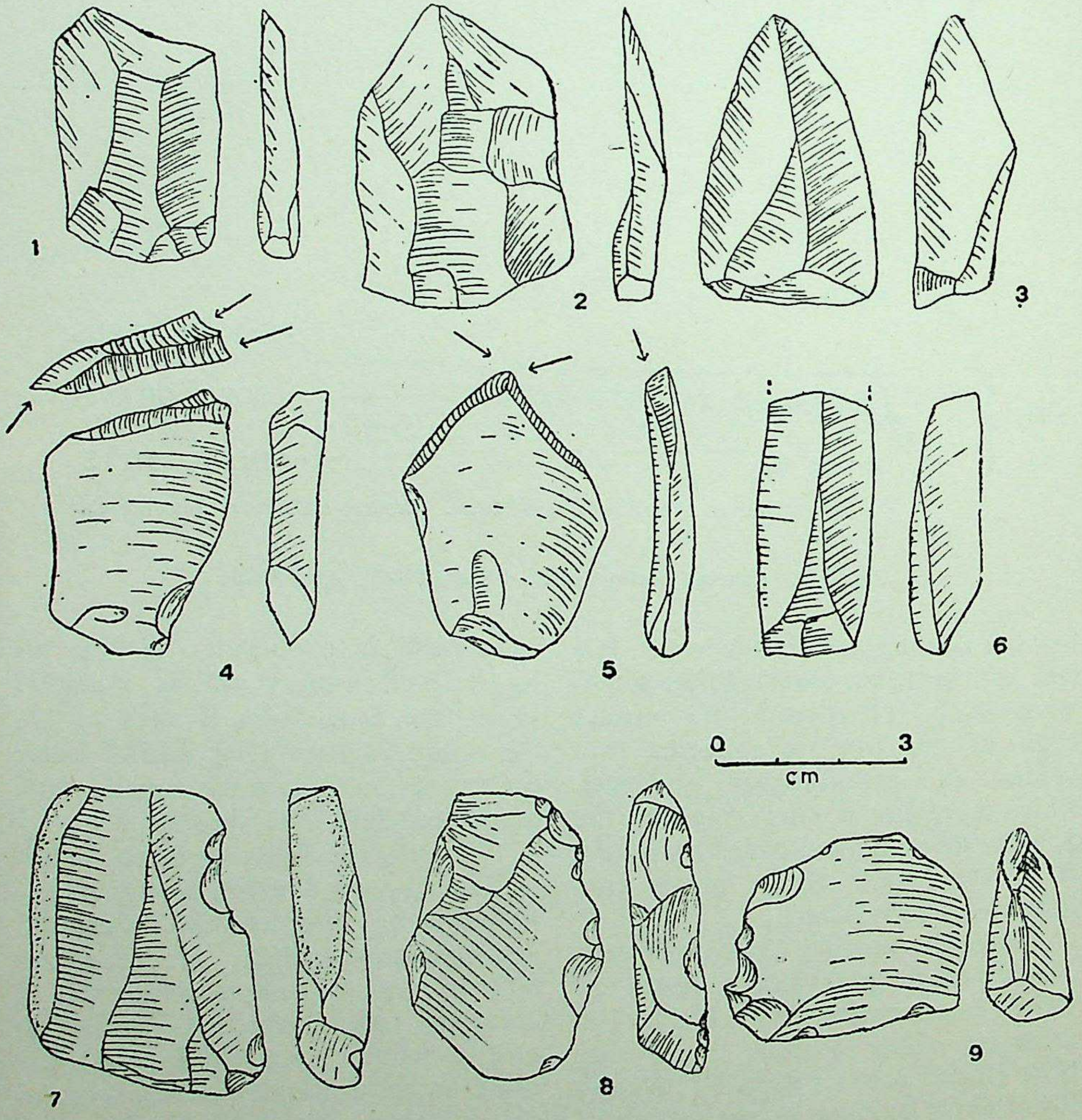

Fig. 7.16. Tools from the Soan Valley. No 1 from Ps-3. 2 from Ps-4B, 4 and 7 from Ps-4D. 3, 5, 6; 8 from Ps-9A, and 1 from Pk-10 near Gujar Khan

only a few retouched flakes, but present studies indicate high frequency of such flake tools (Fig. 7.16).

These observations are quite revealing since these may suggest that here in Late Soan B of Third glacial we have a complex which is anticipating the Peninsular Middle Palaeolithic in India on the one hand and some stage, we do not exactly know at present, of the so-called Asiatic Mousterian not (of classical Mousterian) Central Asia (represented by such complexes as have been found at sites like Kara Bura in southern Tadjikistan).

Now, where does all this discussion lead us to? May be to a situation as under :

CORRELATION BETWEEN SOAN AND TADJIKISTAN

The Soan Culture starts in the II Interglacial times, which is equivalent to Alpine Gunz/Mindel. It is called Early Soan and its artifacts are found on Terrace 1 (T_1) of the Soan, which is only next to the highest. In Central Asia we have so far no assemblage of such an antiquity.

The next stage of development of the Soan Culture falls in the III Glacial times, which is equivalent to Alpine Mindel. It is called Late Soan and its artifacts are found on T_1, a terrace lower to T_1 of the Soan. It has been divided into two parts: Late Soan A (earlier, as it comes from the Basal Gravel of T and Late Soan B (later, as it comes from the loessic-silt, found overlain the basal gravel of the same terrace). Obviously, Late Soan B falls in the last phase of the Mindel or III Glacial. Central Asia has Karatau I Pebble culture which may go back to this period.

Then there is unconformity in the deposits. During the III Interglacial times (Mindel/Riss), T_1 was created but so far no tool has been found on this terrace. We do not exactly know the geological history of the Banganga terraces (Sankalia 1974) but T_1 of this site has yielded Chopper-Chopping tools along with Levalloisean and proto-Levalloisean flake-tools which may belong to Late Soan B group. G.C. Mohapatra's and R.V. Joshi's later works in the Beas-Banganga valley also indicate a similar situation (Sankalia 1974). Lakhuti I Pebble Culture may belong to this period.

During the IV Glacial times (Wurm) T_1 was created. It is said that the sites of Dhok Pathan (site no. 7) and Pindi Gheb (Site no. 9) belong to P_1 although some doubts have now been raised by Paterson and Drummond (1962) about their geological position. The cultural assemblage from these sites is termed 'Evolved Soan' or 'Final Soan'. T_1 of Banganga may also belong to this group. It is predominantly flake-blade complex with a fair proportion of chopper-chopping tools. In Central Asia the so-called East Asiatic Mousterian appears to belong to this period.

A Fresh Approach

As may easily be seen from the foregoing, the Late Soan B is the most crucial complex for our proper understanding of the Indo-Central Asian contacts during the Palaeolithic period because T_1 of the Indus-Soan has as yet not given definite proof of the human habitation in western

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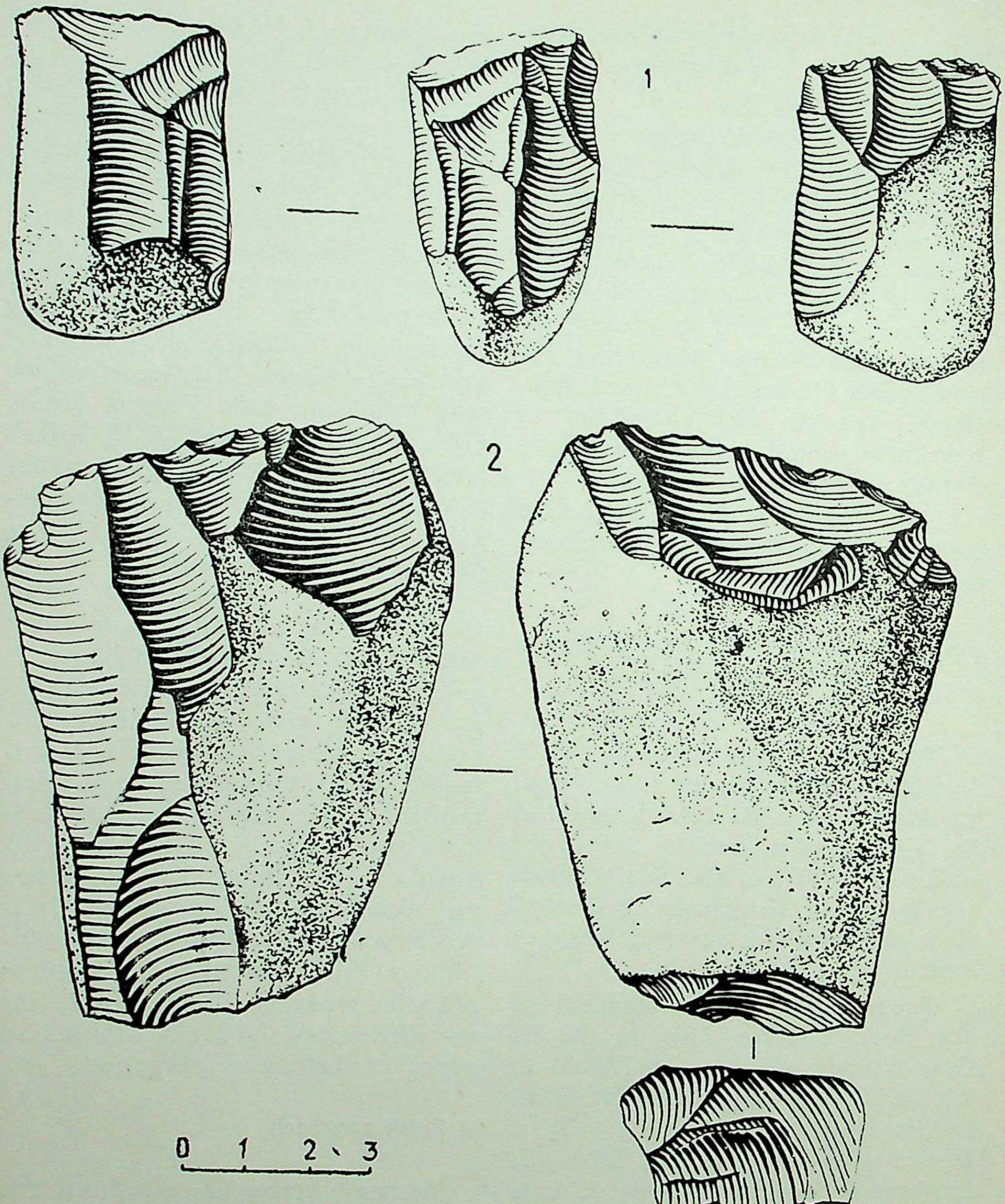

Fig. 7.17 Middle Palaeolithic pebble cores from Georgievsky Bugor site, southern Tadjikistan

Punjab. We are, therefore, proposing a fresh hypothesis:

During the last stage of the Third Glacial migratory tendency started amongst the Soan people and during the Third Interglacial (Mindel/Riss) the Soan people had crossed the Hindukush and reached the Pamirs. In southern Tadjikistan, during the uppermost IIIrd Glacial (Mindel) times(?), rather IIIrd Interglacial (Mindel/Riss) times they developed the Late Soan B Culture whose remains come from Karatau I and Lakhuti I cultures. However, during the same period the Late Soan B Culture comes into contact with the Asiatic Mousterian Culture coming from West Asia through southern Turkmenia and entering southern Tadjikistan. The resultant culture-complex was what is called East Asiatic Mousterian as found at sites like Kara Bura. From now onwards, in Central Asia, the Palaeolithic Culture develops two contemporary streams—one Karatau Culture (same as Soan) and the other Kara-Bura Culture (East Asiatic Mousterian).

In this context it is extremely significant to remember that typical Mousterian never entered Indus-Soan Valley and, therefore, we have no Teshik-Tash Culture in Indo- Pakistan sub-continent. The hybridization between Late Soan B and Asiatic (*i.e.*, West Asiatic) Mousterian, giving rise to Kara Bura Culture, (East Asiatic), is a purely Central Asian phenomenon, whose spill-over is so far seen only at Baba Darwesh cave site in Afghanistan.

However, since Levalloisean element was important in Late Soan B, the Kara-Bura Culture developed what is called 'Mousterian of the Levalloisean tradition' (Fig. 7.17). Also because Late Soan B had pebble Chopper-Chopping element in it, the Kara Bura Mousterian Culture shows it prominently. It is because of the presence of the Chopper-Chopping elements in the Kara Bura complex (Fig. 7.18), Ranov is justified in calling it East Asiatic Mousterian. But the term must be qualified, since it is absent in India; may be a new term should be coined for it: Central Asiatic Mousterian or simply Kara-Bura Mousterian. We leave it for discussion, and consideration of Ranov and his colleagues in Soviet Central Asia.

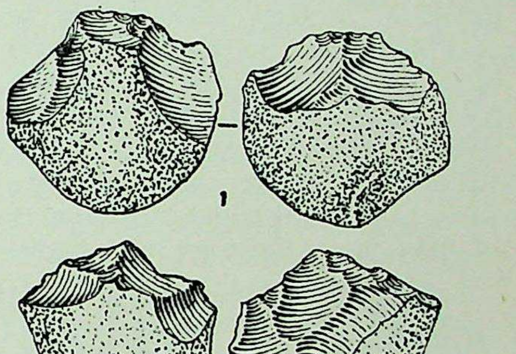

Fig. 7.18. Middle Palaeolithic pebble tools: Kara Bura, southern Tadjikistan

THE POLEMICS OF UPPER PALAEOLITHIC

Now we come to the question of Upper Palaeolithic. In the Soan

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Culture area there is no real Upper Palaeolithic since neither there are prismatic cores nor true blades and tools typical of the Upper Palaeolithic, like backed blades, burins on blades, nosed scraper, etc. The tools coming from T_4, belonging to 'Evolved Soan', which, in typology, may generically be related with Late Soan B, can be called Late Palaeolithic. The same term has been used by Ranov for a group of artifacts which belong to post-Mousterian times, they are also made largely on long Levalloisean flakes. However, in Central Asia this term is interchangeable with Upper Palaeolithic, since at sites like Samarkand, along with a large number of flake tools, there are some blade-tools (Fig. 7.19, and 7.20) and prismatic cores. The entire complex is related to the Siberian Complex of blade tools which ultimately led to Clovis points, Folsom points, etc., of north America.

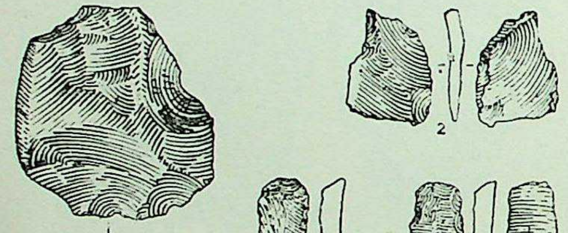

Fig. 7.19. **Upper Palaeolithic tools from Samarkand site**

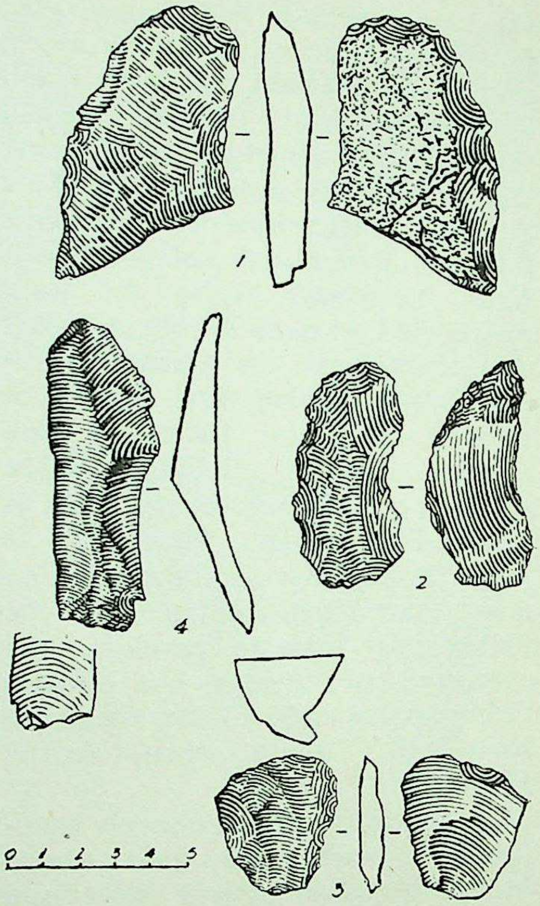

Fig. 7.20. **Upper Palaeolithic tools from Samarkand**

In this context it is also significant to note that the mainland of Afghanistan has not yielded true Upper Palaeolithic material. Material from sites like Hazar Sum will fall in the so-called East Asiatic Mousterian, at best. So is the case with sites like Sanghao Cave in northern Baluchistan. However, an Upper Palaeolithic does exist on the river Balkh at Ak Kupruk, but for all practical purposes, this area formed part of Tadjikistan, ecologically as well as culturally.

The obvious conclusion is that the true Upper Palaeolithic blade-tool element which we meet with in the Upper Palaeolithic — Late Palaeolithic complex of Central Asia—northern Afghanistan is again either an indigenous development or an import from West Asia. In this context, in may be made clear that the Upper Palaeolithic remains which we get beyond the Himalayan zone in Indian mainland are not likely to have played any significant role in Indo-Central-Asian contacts during this period since they are too far away from each other both in space and detailed typology, if not time.

CENTRAL ASIA AND AFGHANISTAN

Falling into the Flake Complex is a very important site in northern Afghanistan which has some bearing on the late phase of the Middle Palaeolithic of Soviet Central Asia. This is the valley of Hazar Sum. It is located at a distance of 16 km north-west of the well-known Samangan Valley. The Hazar Sum valley has a roughly south-north axis (*i.e.*, perpendicular to the course of the Samangan); its length being some 200-300 m. At a height of 10 to 15 m there are the remains of old terraces of river-borne deposits with numerous natural rock-shelters, deep as well as shallow. In them lived the Palaeolithic men who left behind, (even in the open), their lithic tools, made and used locally at the sites.

Although the first specimen of a large flake-tool was found here in 1961 by Puglisi and his associates in the ISMEO, Rome, it was in the following excavation-year that a large number of tools were discovered by the Italian archaeological mission in Afghanistan.

It is significant to note that "though influenced by the climatic phenomena covering in Hindu Kush during the Pleistocene, it represented a periglacial area and hence was particularly suited to life in the inter-glacial periods and after the last Ice-Age phenomena. Human presence even during the interstadial stages of the last glaciation is not to be excluded — the scattered implements of a Levallois and Mousterian technique are here significant. The lack of Gravettian may be equally indicative of a particular climatic-environmental situation."

The above observation of the explorers, therefore, tries to place this complex in a late phase of the Upper Pleistocene when Soviet Central Asia witnessed the last stages of its Middle Palaeolithic of the Levalloisean-Mousterian facies. Because of its location, near the upper reaches of the Oxus, it is expected to belong to the so-called East Asiatic Mousterian Complex whose remains are found at sites like Kara Bura in southern Tadjikistan, and also Late Soan of the lower Himalayas. But how the situation at Hazar Sum differs from both the complexes will be shown after the following observations we would like to make on the typology of the tools.

The flakes are of two varieties — Clactonian and Proto-Levalloisean; typical Levalloisean flakes with faceted platforms are practically absent. The majority of the flakes are big and broad irregular flakes with retouched margins leading to different kinds of scrapers — concave, convex, straight, triangular, oval, trapezoidal, etc.; points are rare. All such tools have bold retouch, sometimes almost like irregular denticulates. The blanks over which such tools are found, sometimes show pebble cortex, indicaing the use of primary flakes also for the tools. The broad angled plain platforms, prominent bulbs-of-percussion and deep flake-scars clearly show the employment of free-flaking techniques (Fig. 7.21 and 7.22).

The proto-levallois flake-blades are regular in shape — long, triangular or leaf-shaped showing two or three ridges along the medial axis on the ventral side. The platforms, it must be noted, are plain but showing a very low angle. A few cores have also been found which are clearly parental to the flake-blades (Fig 7.23).

Bifaces are rare, only a couple of

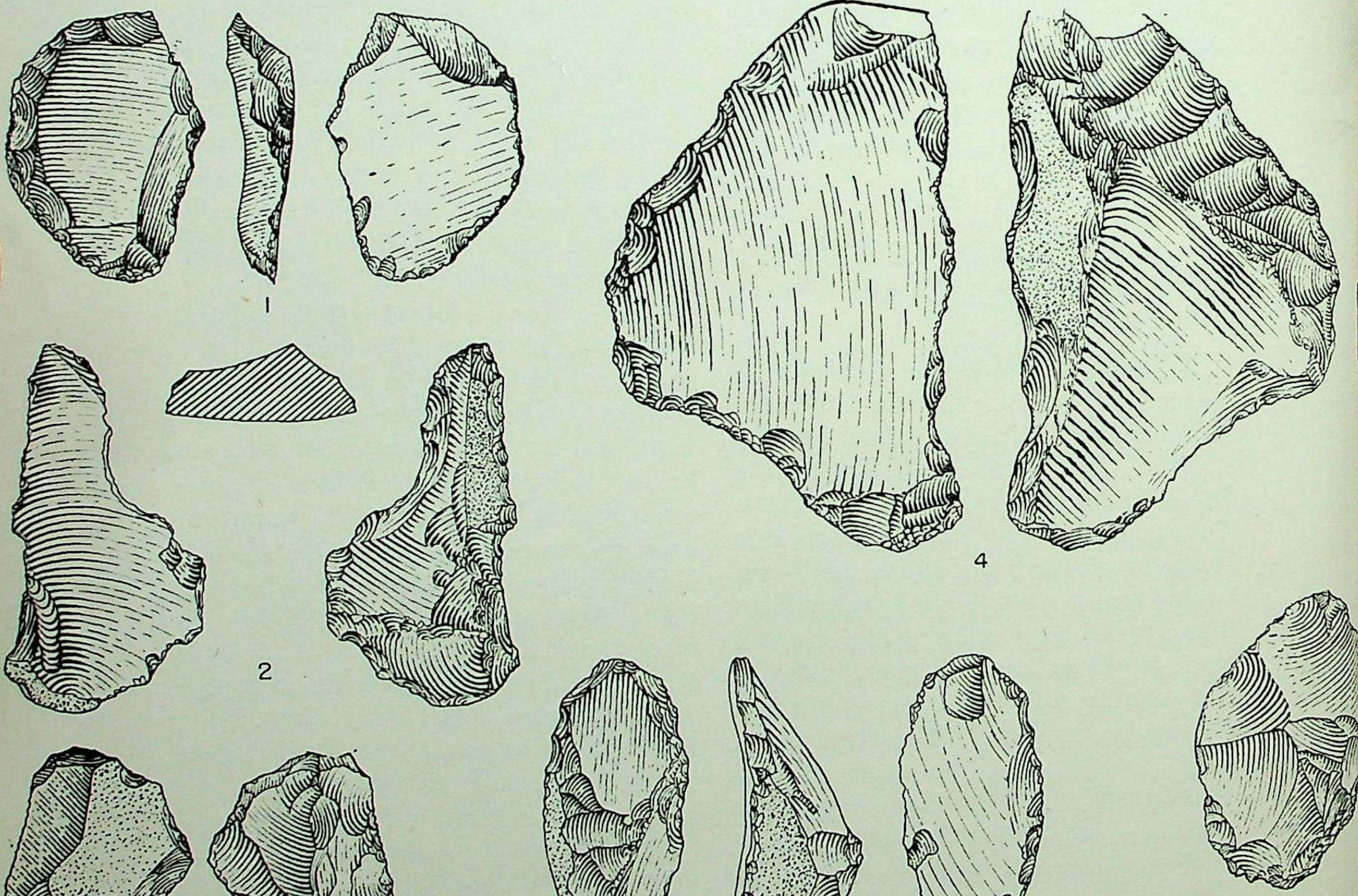

Fig. 7.21. Flake tools from Hazar Sum, northern Afghanistan. (Reduced to 1/3rd size)

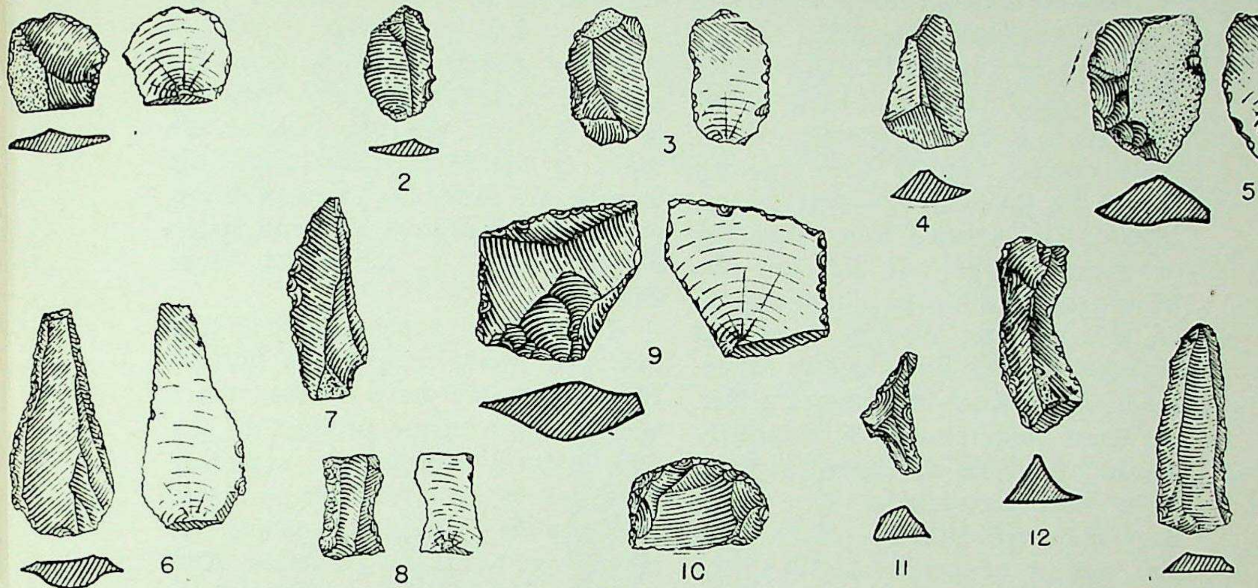

Fig. 7.22. Flake tools from Hazar Sum, northern Afghanistan (Reduced to nearly 1/3rd size)

examples have been noted but they do not lead to handaxes, they remain scrapers.

Some of the flake tools also show inverse retouch, a technique which was well-known to many flake cultures.

The Hazar Sum tools were made out of a type of dark brown flint.

Some of these tools, the explorers maintain, were re-used during the Neolithic times while some were freshly made. They say, "there were three oval-shaped bifacial implements of careful make, as also a few thin blades delicately retouched, of undoubted neolithic character. Morevover, the flint used is different from that of clactonian — type tools, the preference now being for a grey or yellow-brown variety. The latter type of implement has been found on the top of the terraces."

The above observation is only to be kept in mind while further explorations are made since there is nothing particular to associate the tools with neolithic as such. The collection as a whole falls into the category of Clactonian-Proto-Levalloisean complex.

Now the question is, to which culture-complex it belongs?

The explorers under foot-note 9 observe : "As far as Central Asia is concerned, affinities between this industry and those of the Soan area in north-west India may be noted (De Terra and Paterson 1939) ; and with those of Aman Kutan, south of Samarkand (Lev 1949); this last named industry. "clacto-pre-Mousterian" or "Tayacian" in character, is assigned by Movius to the third interglacial period (Riss — Wurm)." According to this the complex belongs to a period earlier than the last glaciation.

Now the difficulty that the explorers face is the age-determination. Obviously, nothing can be said about it since no geological study has been made. We have to go by the typology of the tools alone. And if the typology should be taken to belong to the pre-Mousterian Aman-Kutan, then the assemblage does not fall into the Mousterian what to say of a late phase of this culture. And if we take it analogous to the East Asiatic Mousterian on the Kara-Bura complex then the Hazar Sum industry is singularly devoid of pebble Chopper-Chopping tools which characterize the Kara-Bura industry. Similarly, if this complex has to be compared with any of the Soan Complexes — Late Soan B or Evolved Soan — the same difficulty will arise, the absence of pebble Chopper-Chopping element.

One thing more: neither the Central Asian nor the Lower Himalayan Late Soan is dominated by such large Clactonian-flake tools. But Peninsular Indian Middle Palaeolithic has numerous tools of this kind and that too without the mixture of pebble Chopper-Chopping tools. However, the Indian flake-blade tools of the Middle Palaeolithic are marked by some Levalloisean flakes with faceted platforms, an element completely absent in the Hazar Sum Complex.

The obvious conclusion emerging out of the above discussion is that at Hazar Sum we have a flake culture which was the unique product of its own natural environment, including the types of flint nodules available locally to the Palaeolithic people. It may belong to the last glaciation. And to that extent it shares some of the common characteristics of the contemporary flake-cultures of Central Asia and Indo-Pakistan subcontinent. But since it has no real Levallois and Pebble tool elements in it, it can hardly be equated either with Kara Bura or Late Soan.

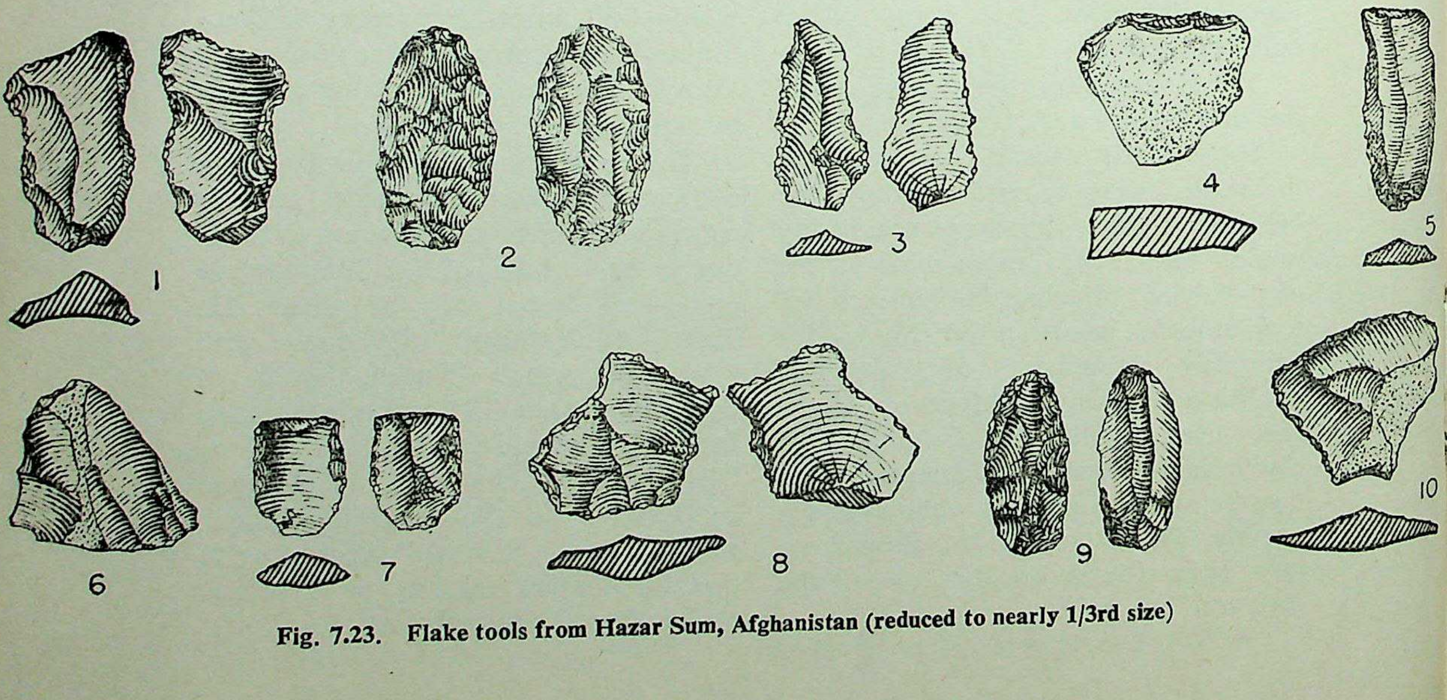

Fig. 7.23. Flake tools from Hazar Sum, Afghanistan (reduced to nearly 1/3rd size)

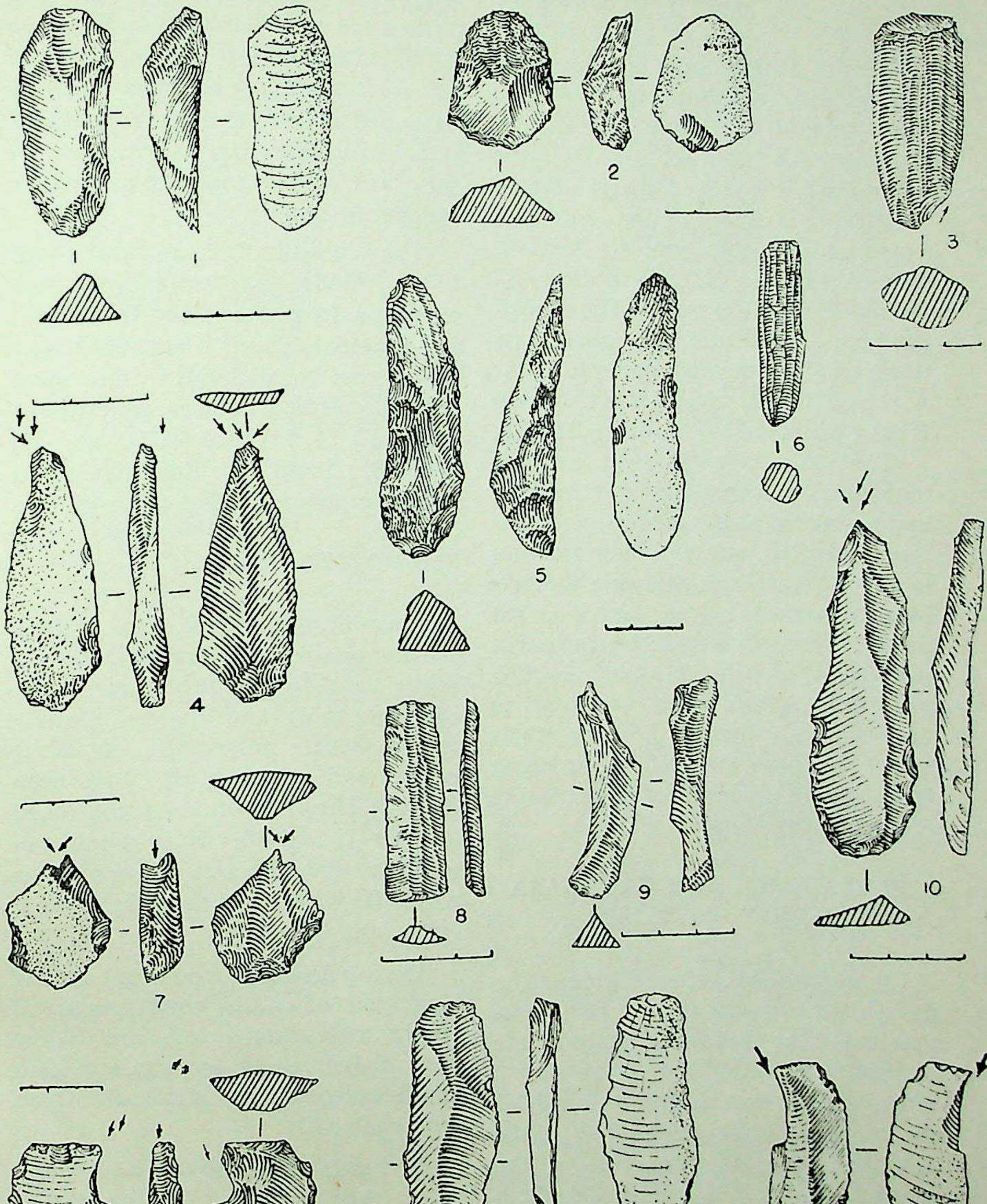
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Fig. 7.24. **Upper Palaeolithic tools from Ak Kupruk; northern Afghanistan**

Kuprikian Complex

Besides Hazar Sum, Afghanistan has yielded a rich complex of lithic blade industry of Upper Pleistocene times at Ak Kupruk, located in the limestone hills south of Mazar-i-Sharif on the river Balkh. The tools were found both in the open-air stations (Kupruk II and III) and in the rock-shelter or cave (Kupruk I). The deposit has been divided into two phases on the basis of an intervening sterile loess : A, the older, and B the latest. Phase B has been dated to 16, 615±215 B.P.

The blade industry (Fig. 7.24) of both A and B included : cores, utilized and retouched side and end—scrapers-burins, keeled scrapers, combination tools (end scraper-burins, side scraper-burins) backed blades and a tanged point. The micro-industry included: cores, points, burins, bladelets, backed bladelets. Anvils also occurred in both phases. Incised bone spatulas and bone points were found in Phase B along with a possible stone sculpture of a pregnant woman.

CENTRAL ASIA AND GANDHARA REGION (PAKISTAN)

As mentioned earlier, falling in the flake-blade complex there is an important site in the Gandhara region, the Sanghao Cave site.

Sanghao is now a little village in the Peshawar Valley at the foot of the hill that separates Buner from the Mardan District in which the well-known microlithic site of Jamalgarhi is located. It is significant to note that from Sanghao, Mardan is only 35 km. It is a cave site in a conglomeratic formation, called *Khandao.* There are a number of caves in this outcrop, some well-known for Buddhist establishments and some for perhistoric settlements. The cave actually excavated for Stone Age assemblage is called Parkho-darra Cave, measuring about 24 m in length, 11 m in depth and 5 m in height.

The deposit in the cave was about 2·75 m, divided into twelve layers, each separated from the other by an ash-and-charcoal deposit. The occupational debris has been divided into three periods : from bottom upwards—1 (layers 12, 11, 10) II (9 to 5), and III (4 and 3) ; 2 and 1 are Buddhist, dated to 2nd century B.C.—2nd century A.D.

PERIOD (I TO III)

Layer 12, the lowest, has yielded ash and charcoal together with animal bones, teeth, fragments of horns, plenty of quartz tools and quartz. Besides quartz, schist fragments, including points and edged tools, have been found. The same situation continued in layers 11 and 10. It is significant to note that the size of tools in this period (I) were larger than those made in the later periods.

During period II, tools of similar kind, but of smaller variety, made of quartz, some stained red, and schist were found along with animal teeth and fractured bones; some of which were charred.

Period III is a continuation of the Stone Age material of the earlier periods. Along with the red stained quartz and schist tools three animal horns and hammer-stones of granite, bone fragments and animal teeth were found.

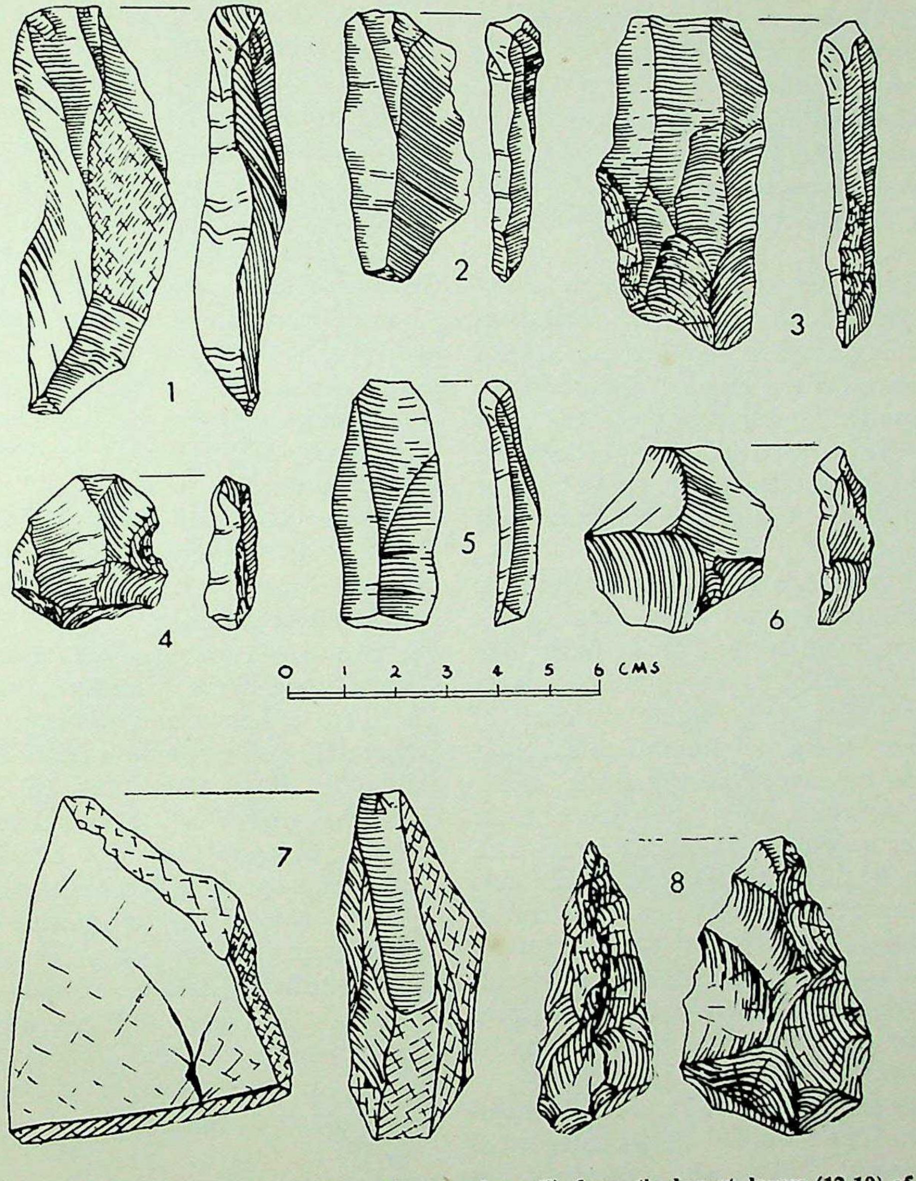


Fig. 7.25. Flake and blade tools, No. 8 is a handaxe (?), from the lowest layers (12-10) of Sanghao Cave, northern Pakistan. *After B. Allchin*

TOOLS

The tools recovered from the Sanghao Cave fall in the general category of 'flake-blade-and-scraper'. Since most of the tools were made on quartz, they were rather rough in appearance (Fig. 7.25 and 7.26). The quartz was, of course, easily available in a nearby outcrop. Dani, the excavator, observes that "the tools show a technical tradition which comes closest to the Levallois-Mousterian flaking technique of Europe and Western

Asia. In terms of Indo-Pakistan Prehistory, it is referrable to the Middle Stone Age industry."

Core Tools : The tools have been grouped into four categories : (i) Discoidal cores, (ii) Tortoise cores, (iii) Fluted cores, and (iv) Waste cores.

The cores, as a rule, were carefully prepared with platforms sometimes showing single facet, sometimes several facets. Quite a number of cores were further worked to produce edged tools of different varieties mainly reduceable into (a) discoids, (b) chopping tools or probably small handaxes, and (c) scrapers.

Long blade-flakes, only a few found so far, appear to have been struck from fluted cores. It is from such fluted cores that triangular points were removed. Many small varieties of points were struck from discoidal cores in the process of making other tools. By striking away one side of these cores we get one variety of tools which may be used either as chopping tools or more preferably as scrapers. From tortoise cores we get another variety which may be included among semi-circular scrapers—a type which appear to be a predecessor of the crescents or lunates of the microlithic period'.

Flake and Blade-flake Tools : The majority of the tools fall in the category of scrapers. The next category is points, sometimes with a notch or two at the base, probably for hafting. Awls and burins come next. It is significant to note that the largest number of burins have been found in period I, and their number is reduced as we go upwards. Similarly, it should be noted that some triangles with hollow base have also been found.

Thus, the flakes and blade-flake tools may be broadly grouped into scrapers and points, although within each group, several sub-types are found. Thus, scrapers include leaf-shaped, side (straight, concave, convex, double, hollow), notched (single and double), end, fan-shaped, semi-circular, discoid and tanged types. Some of the scrapers may be classified as scrapers-cum-points. Points include tanged, triangular, notched, long, etc.

Although awls may be included in the category of points, burins form a separate group.

Hammer Stones and Anvils : In Trench D, layer 4 A (Period III), a dozen hammer-stones with three pieces of horns have been found. All of them are river-rolled pebbles of granite, usually found in the Malakand ridge. They are either round or flat on two faces : only one example was a complete ball. It is significant to note that 'the centre of these stones is crudely chipped and has either a dimple or a rough scar. The flat stones with the rough scars appear to have served as an anvil or a base for striking quartz flakes, and the round ones with a dimple could be used as hammer-stones in a haft. These could be used for the application of blow on to the quartz nodules.'

DISTRIBUTION OF SANGHAO INDUSTRY IN GANDHARA REGION

As far back as 1958, D.H. Gordon, without illustrating his collection, mentioned his discovery of similar tools on semi-translucent banded quartz and black indurated shale in a cave at Jamalgarhi, hardly 35 km from Sanghao Cave. He called them micro-

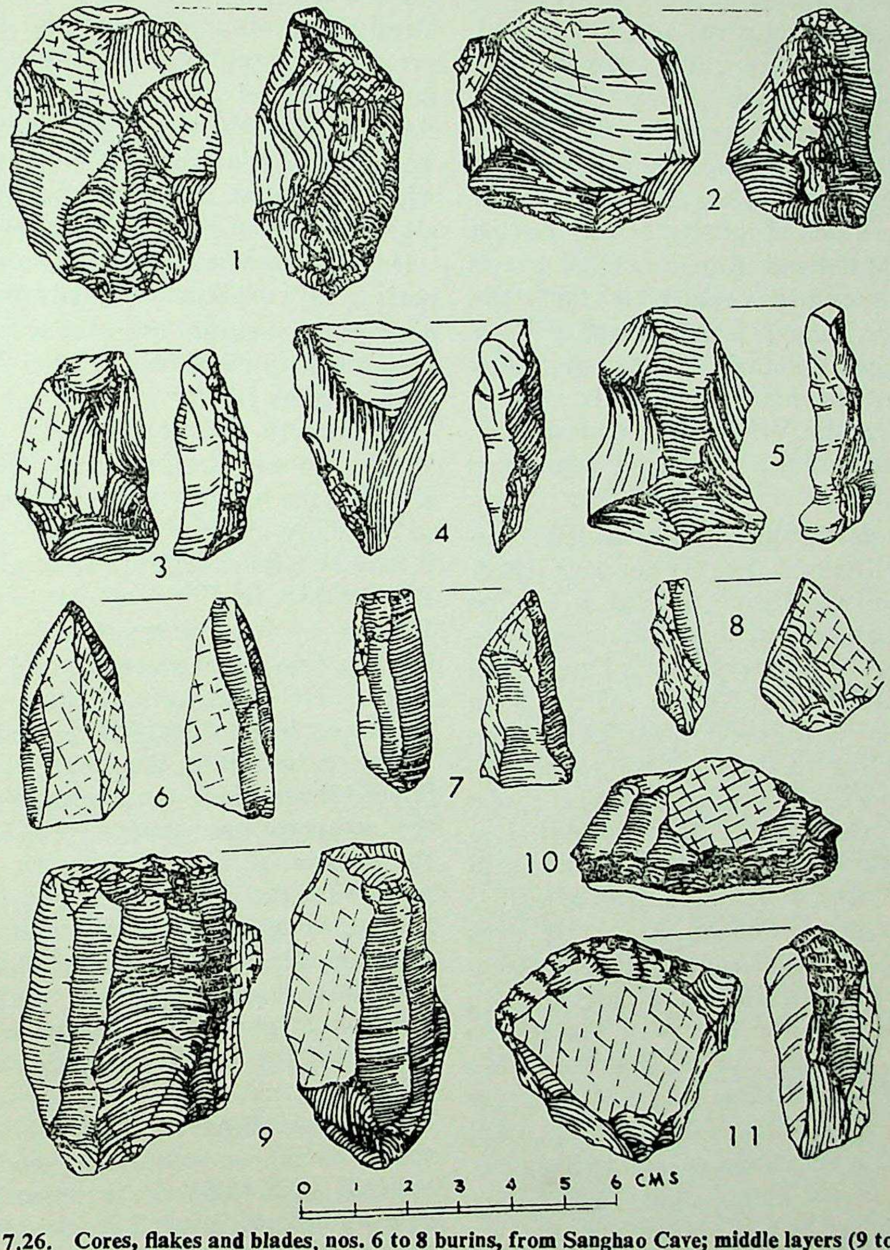


Fig. 7.26. Cores, flakes and blades, nos. 6 to 8 burins, from Sanghao Cave; middle layers (9 to 5).
After B. Allchin

liths. According to Dani his collection of tools belongs to the category found in Period III levels of Sanghao. This observation he has made after re-visiting the Jamalgarhi Cave and making a fresh surface collection.

Dani explored the area more extensively than Gordon had done. He has now come to the conclusion that the quartz industry of this kind had a wide distribution in Gandhara. The tools have been found not only in caves but also in the open. Thus, in between Jamalgarhi and Takht-bahi, on the same Paja hill, in an isolated hillock, near the village Katigarhi, about 11.5 km east of the main Mardan-Malkand Road, three more caves have been located. They also produce the same kind of quartz tools. Across the Malakand Range similar quartz tools have been collected in the open field at Thana, Chakdara and as far as Mingora in Swat State. A newly discovered rich site lies in Dir State. All over this Valley, right up to Bajaur, the quartz flakes are found in the open fields.'

Unfortunately, such a widely scattered industry has yet not been dated. Even in the Soan Complex it has no real parallel although Dani seems to agree with Paterson and Drummond that it is Upper Clacton of the Soan (which is different from Late Soan, according to the two authors) belonging to T2—T3 times. Dani also agrees with them that it is Levalloisean-Mousterian and seeks its parallels in Iraqi Khurdistan and Iran as well as in southern Central Asia. He even talks of Central Indian Middle Palaeolithic in this context. Curiously enough, he has included in it even the Hazar-Sum industry of Afghanistan. We are afraid, all these may not turn out to be valid areas of comparisons. Let us begin with a site nearest to Sanghao. It is Hazar-Sum whose details have been given in the earlier section. As has been pointed out, the Hazar-Sum Complex is completely devoid of Levalloisean flakes, fluted cores and burins while the Sanghao Complex has all the three elements. The two groups appear to be absolutely distinct. Similarly, the East Asiatic Mousterian of Kara-Bura complex found in southern Tadjikistan is marked by pebble chopper-chopping tools and the abscence of fluted cores and burins. Obviously, it does not bear any significant similarity not only with the Sanghao Complex and with the Central Asian Mousterian but also there are marked differences between the two assemblages. The comparison with the Soan is equally misleading on the same ground—the so-called Upper Clacton has neither the fluted cores nor the burins.

It appears that the industry with which we are dealing here belongs either to the last phase of Pleistocene or the early phase of Holocene. If so it may be a local variant of the Upper Palaeolithic leading to Mesolithic. We are of the opinion that there is a definite time-lag between Period I and Period III complexes. Burins from the lowest levels (layer 12) as well as fluted cores from the lowest levels (layer 11) are more symptomatic than the scrapers and points. Similarly, the choice of material, quartz, goes more with the Mesolithic industries of Indian subcontinent than with any other group of industries. Gordon with his vast experience in India somewhat rightly suspected the Jamalgarhi industry as microlithic, albeit non-geometric.

But one thing is clear, although there was a definite tendency towards microlithism, the assemblage as a whole does not fall in the Mesolithic. Since fluted cores and long blades are rare, it could not be typical Upper Palaeolithic either. The flake-blade assemblage dominated by scrapers and points certainly falls into the overall Levalloisean-Mousterian group but it has a distinct personality.

The Gandhara industry is neither Kara-Bura, nor Hazar-Sum, nor Soan. The comparisons with Iraq, Iran and Central India are just superficial and do not lead us anywhere. As all the Bronze Age assemblages of these regions were not interrelated so the flake-blade assemblages of this regions do not appear to have been interrelated. But no one can deny that the directional changes occurring in the flake-blade assemblages in Central and South Asia during the last phases of the Pleistocene swept even the Gandhara region.

MICROLITHS IN POST-MESOLITHIC CONTEXTS IN CENTRAL ASIA AND INDIA

As has already been pointed out at the outset, microliths continued to be in use long after the Mesolithic period, particularly in the deserts of Kazakhstan and steppes of Siberia and their neighbouring regions. But with the difference that the tool-making techiques in the Neolithic and Bronze ages evolved to a very high degree due to which, besides the usual geometric shapes, burins, arrow-heads, long drills, shouldered points, awls and a variety of other specialised cutting and piercing implements were manufactured on long narrow blades, 5 to 7 cm. long and 5 mm. wide, with very fine regular retouching. Such beautiful tiny tools on semi-precious stones characterized the neolithic and chalcolithic assemblages at Janbas-Kala 4 (delta of the Amu river), Agispe (northern Aral region), Kara-oi (western Aktiubinsk region), Besh-Bulak (Kizil-Kum desert), Saksaul (northern Aral Sea region) and, Ust'-Kiakhta and Khutor Storozhveskii (both in trans-Baikal region). It is significant to note that these assemblages, almost in all examples, have been found along with pottery and bifacially retouched arrowheads. The same situation exists in China and Mongolia. Towards the west of Kazakhstan, such assemblages are found in the context of Bronze Age in the Volga and Dneiper basins. Thus, from the late fourth millennium B.C. to the second millennium B.C. We have this assemblage over a very wide area in the steppe and semi-desert zones. It is significant to note that it is unknown to the north and to the south of this area. In this assemblage microliths (along with pottery) of a different typology exist; even heavier polished tools go with them, as in Djeitun Tepe, in south Turkmenia.

A situation similar to it exists even in India. Microliths did not stop with mesolithic. They continued to be in use during the neolithic and chalcolithic periods, although during the Bronze Age they were only rarely in demand. The examples of this situation, however, exists more in Peninsular India than in north-western India. A little detail of this situation may now be given.

In north-western India there are two major areas of the Neolithic—Kashmir Valley and Kangra Valley. In Pakistan also there are three areas of Neolithic—Baluchistan, Potwar and Sind; to a limited extent even in the Punjab. The microliths do not figure, neither in Kashmir Valley (type site : Burzahom) nor in Kangra Valley (type site : Ror), Baluchistan has, of course, yielded microliths (type site: Kile Gul Mohammad) but not of the real geometric forms. Of course, they come from pre-pottery levels. In Potwar region microliths are not found (type site: Sarai Khola). The same is true of the Punjab plains (type site: Jalilpur). In Sind there are many sites of doubtful antiquity where microliths have been found. For example, some 13 km north-east of Karachi, there is a site near river Lyari where Col. Todd found some microliths, such as crescents, trapezes, points and blades, made on Rohri-Sukkhar chert. But it is significant to note that they were made on ribbon-like blades and fluted cores typical of the Bronze Age Harappan Culture. The geometrics are so only in form, otherwise they hardly show the retouch we meet with in typical microliths. Moreover, out of 340 tools, now housed in the British Museum, only 40 appear to belong to the category of so-called geometric microliths.

So far the Indo-Gangetic divide has not yielded any microlithic site or neolithic and chalcolithic site with microliths.

In the Ganga basin, on the banks of an ox-bow lake (obviously indicating the presence of an old course of the river) at Sarai-Nahar-Rai in District Pratapgarh there is a classic mesolithic site with geometric microliths and extended burials. It is presumed that the site goes with other mesolithic sites in the District of Mirzapur where a large number of natural caves with mesolithic deposits have been found (type site: Lekhahia). The complex is devoid of pottery; pottery appears in very late levels of microlithic assemblage. But this complex in the Vindhyas was succeeded by the Neolithic in which microliths do continue. Recent excavations conducted at Koldihwa, Panchoh and Mehagaha, all situated near Deoghat, 80 km. south-east of Allahabad, have yielded microliths along with polished stone axes and pottery from inside the huts (Misra 1977).

In eastern India, at sites like Kuchai in Orissa, microliths have been found along with a hand-made red gritty pottery.

In south India, geometric and non-geometric microliths have been found along with polished axes at most of the neolithic sites, such as Brahmagiri and Sangankallu (Gupta 1972).

In Western and Central India microliths have been found along with chalcolithic assemblages at sites like Nevasa and Navdatoli.

In this context, it may, however, be mentioned that along with typical microliths, long blades, often with crested-ridge, have been found. Crested-ridge blades though appear with the Pre-pottery microlithic assemblages of the Vindhyas, is found highly developed in the Chalcolithic context, for example at Navdatoli, where, it is presumed, the technique was adopted to produce long blades. The technique, however, still remains unreported in Central Asia.

CENTRAL ASIA AND INDIA DURING THE MESOLITHIC

The Mesolithic of Soviet Central Asia, particularly of South Turkmenia and Tadjikistan, has only distant similarity with the Indian Mesolithic. To begin with, the area immediatly bordering Tadjikistan, northern Afghanistan, northern Baluchistan, Swat Valley and the Punjab and Haryana are practically blank in the present stage of our knowledge. One site in Afghanistan and one or two sites in northern Pakistan (such as Sanghao cave in Peshawar Valley and Jamalgarhi Cave in the Mardan District, both located in Gandhara region) are all that we know of. And here too we are not at all sure if we are really dealing with Mesolithic since Dai, the Allchins and others would take this assemblage as East Asiatic Mousterian. Still, period III assemblage of Sanghao Cave may belong to the Mesolithic. In the lower Indus basin in Sind also there are a few sites but they may form a different zone and a different complex. All this, therefore, emphasizes two things: first, there is an urgent need of more explorations in this region, and, secondly, still we do not hope to get too many Mesolithic sites for reasons of topography and climate.

In the lower Himalayas and on the Indus-Soan terraces, where once lived the Palaeolithic people at a large number of sites, we have practically no evidence of the Mesolithic. In fact, prismatic core technique of blade-production was only rarely adopted (known so far known only in Gandhara) by people in this region — even during the neolithic period. Beas-Banganga terrace yielded only polished axes, pebble chopper-chopping tools and flake tools at sites like Ror. The Punjab and the Indo-Gangetic divide have also not yielded any microlithic assemblage. Similarly, the Gandhara region has also not proved very encouraging, although it is a potential area.

DISCUSSION

We are, in the mesolithic context, faced with a peculiar situation :

Soviet Central Asia has a wide-spread Mesolithic Complex, right up to the basin of the Oxus in Tadjikistan as also in northern Afghanistan (as recent explorations by Vinogradov show), and India has also a very wide spread Mesolithic Complex, right up to Rajasthan, but Pakistan has yielded evidence of this complex only in Sind and North-West Frontier Province. Afghanistan, is more or less blank so far if Jamalgarhi and Sanghao caves are excluded. If future researches do not change this situation, the questions which we will have to face are : How Mesolithism, as seen in pre-neolithic microlithic assemblages (so far, at least), spread in South Asia? What was its immediate source? What role Central Asia played in the process of diffusion (if diffusion was the main mechanism which brought about the change from Palaeolithic to Mesolithic in this part of the world?

It is not easy to answer these questions satisfactorily at the present stage of our knowledge. However, a few observations may be made.

Post-Pleistocene environmental changes (floral, faunal and climatic) from the Pamirs, through the Hindukush and the lower Himalayas, witnessed a kind of change which was slightly different from that witnessed by the tropical regions of Sind, Rajasthan, southern Uttar Pradesh, Bihar, Orissa, Madhya Pradesh and other parts of peninsular India. If so, the adaptability pattern of the people in two different regions — temperate zone and tropical zone — appear to be slightly different from each other. Still, post-Pleistocene environmental changes in the two regions shared some basic features, since it was more or less a world-wide phenomenon. And to that extent tools, which occurred during the late Pleistocene, now culminated in the adoption of pygmy tools, called microliths. From heaviest of the Lower Palaeolithic to the smallest of the Mesolithic is a phenomenon which brings out quite clearly the directional changes in tool-making techniques over most part of the world. It, of course, does not mean that in the Lower Palaeolithic small tools were not made and in the Mesolithic heavy tools were not made, but the general trend was big to small to smallest. But why did it happen so?

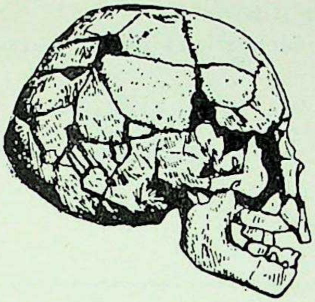
As observed earlier, post-Pleistocene environmental Changes and the efforts of mankind to adapt itself to the new natural changes appear to be some of the most important factors underlying the change in tool-technology, but, evidently, that alone will not explain everything. There are a few more factors underlying this change.

The inherent desire of man to free himself from the clutches of nature is in no measure a small desire. Material development of mankind depends on it. Technological changes followed this desire. It is common knowledge that Lower Palaeolithic sites are generally located on the banks of rivers or fresh-water lakes but Middle Stone Age sites are found located slightly away from these water-courses also. And Mesolithic sites may be found in places even too far removed from the water courses. How was it made possible?

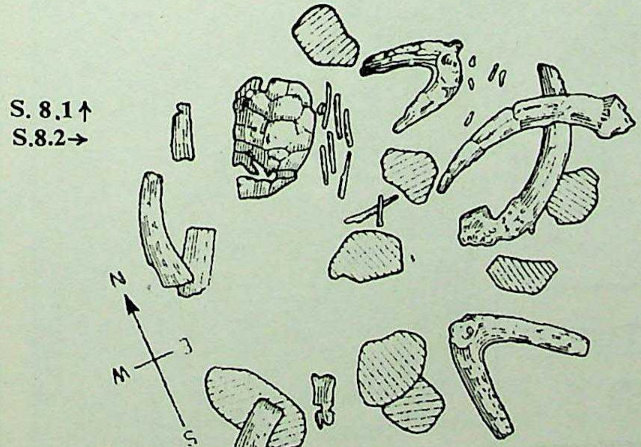
One of the underlying reasons appears to be technological changes by which small tools could be produced. Now a large number of the tools could be carried easily in a bag over long distances, far away from the water courses. For people depending on hunting and gathering for their food-supply mobility was certainly hampered when in the Lower Palaeolithic they made heavy tools since not many of them could be carried for long distances, but it certainly increased many folds when pygmy tools were made.

This is about the general directional changes in tool technology. When faced with specific situations, changes to suit the local needs must have become inevitable. That is why the semi-arid temperate zones of Afghanistan and Gandhara region as well as the Lower Himalayas do not seem to have gone for geometric microliths while all other areas of the tropics in South Asia adopted it.

Diffusion is a very simple explanation when two assemblages show similarities but it must be remembered that the mechanism of diffusion has to be proved on independent grounds in which time and space factors remain supreme. Unfortunately, on these two grounds, the theory of diffusion does not hold good so far. It, however, does not mean that it stands rejected. Far from it. But it has to be firmly established. Obviously, more field-work is immediately called for.



THE RESUMÉ


S. 8.1 ↑
S.8.2 →
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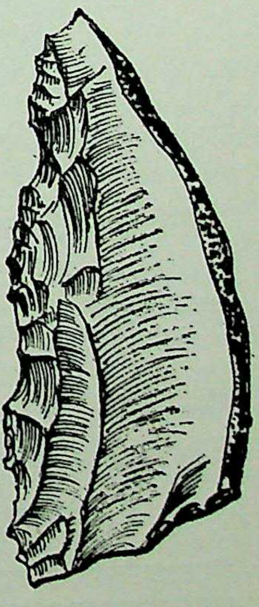
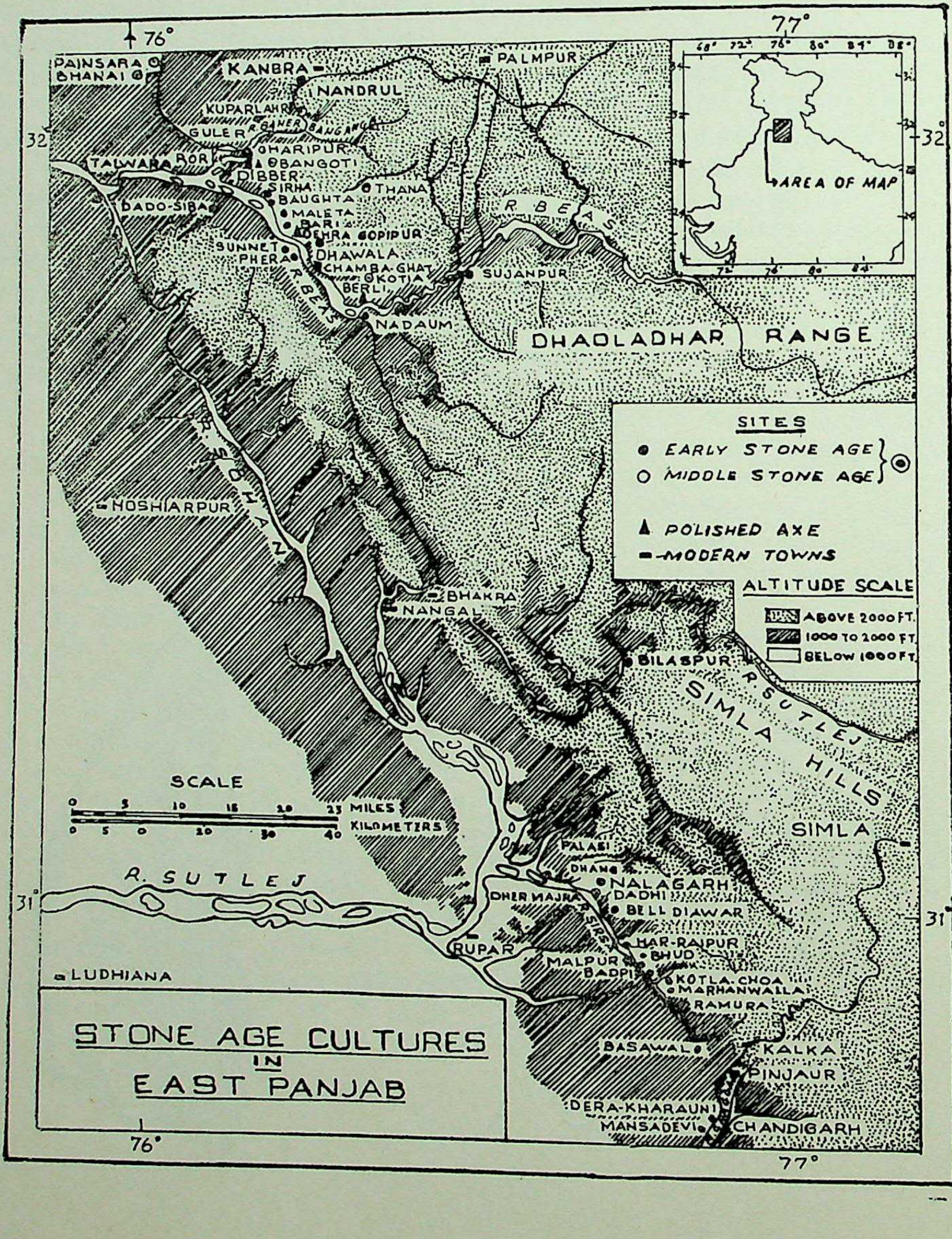


S.8.1=Skull of the Neanderthal boy from Teshik-Tash south Uzbekistan

S.8.2=Neanderthal burial at Teshik-Tash, south Uzbekistan Mousterian Flake tool (scraper) from Ogzi-Kichik, south-Tadjikistan


76°
77°
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31°
PAINSARA
BHANAI
KANBRA
PALMPUR
NANDRUL
KUPARLAHR
GULER
R. GANER
BANGANGA
HARIPUR
TALWARA
ROR
BANGOTI
DIBBER
SIRHA
THANA
BAUGHTA
DADO-SIBA
MALETA
BARI
DEHRA GOPIPUR
SUNNET
PHERA
DHAWALA
CHAMBA-GHAT
KOTIA
BERLI
SUJANPUR
R. BEAS
NADAUM
DHAOLADHAR RANGE
AREA OF MAP
SITES
EARLY STONE AGE
MIDDLE STONE AGE
POLISHED AXE
MODERN TOWNS
HOSHIARPUR
R. SOHAN
BHAKRA
NANGAL
ALTITUDE SCALE
ABOVE 2000 FT.
1000 TO 2000 FT.
BELOW 1000 FT.
BILASPUR
R. SUTLEJ
SIMLA HILLS
SIMLA
SCALE
0 5 10 15 20 25 MILES
0 5 10 20 30 40 KILOMETERS
PALASI
DHANG
NALAGARH
DHER MAJRA
DADHI
BELL DIAWAR
R. SUTLEJ
RUPAR
HAR-RAIPUR
BHUD
MALPUR
BADPI
KOTLA CHOA
MARHANWALLA
RAMURA
LUDHIANA
STONE AGE CULTURES IN EAST PANJAB
BASAWAL
KALKA
PINJAUR
DERA-KHARAUNI
MANSADEVI
CHANDIGARH

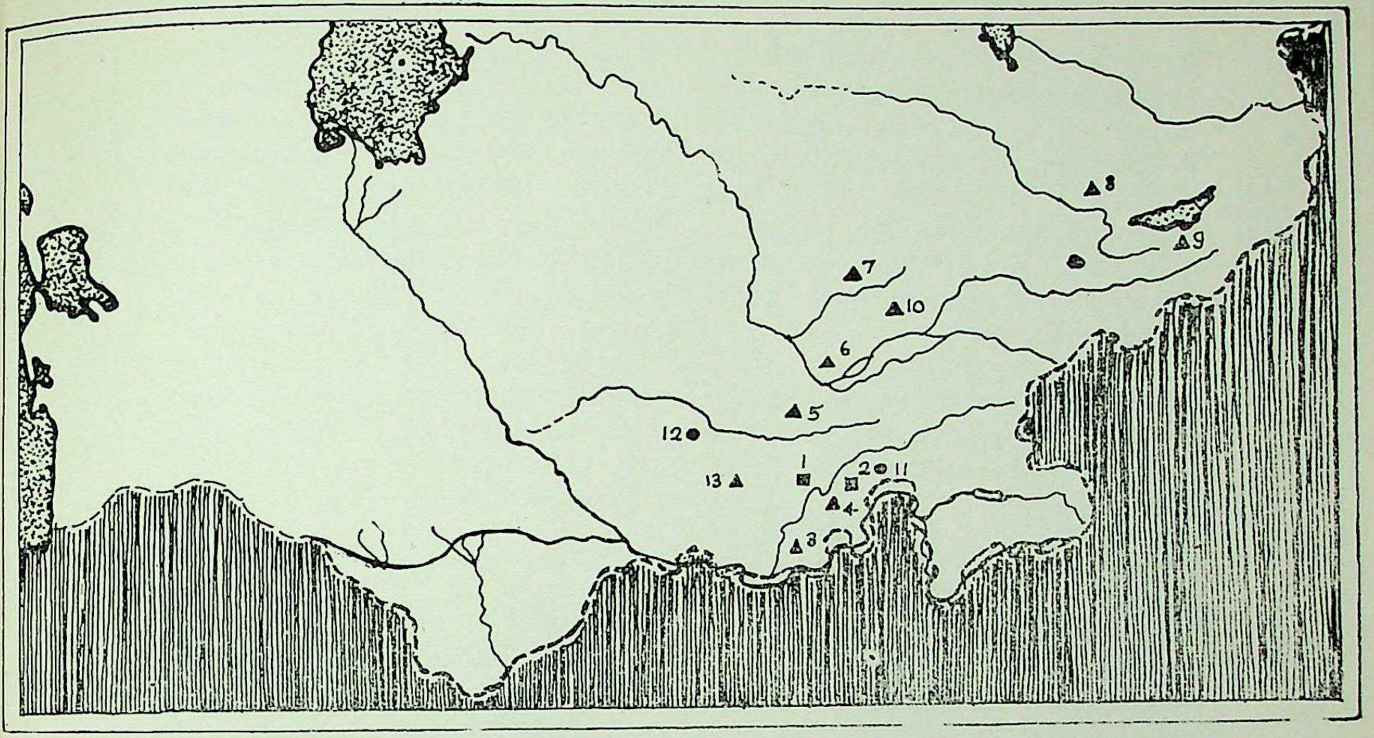

Fig. S.8.3a. Symbols : Rectangle, Lower Palaeolithic; Triangle, Middle Palaeolithic; Round, Upper Palaeolithic

Important Palaeolithic sites in Soviet Central Asia. 1. Karatau I; 2. Lakhuti I; 3 Kara Bura; Ogzi -Kichik; 5 Jar-Kutan; 6 Kairak-Kum; 7 Obi-Rahmat; 8 Georghievsk; 9 Bugor; 10 Kul-Bulak; 11 Shougnu; 12 Samarkand; 13 Teshik-Tash

THE STONE AGE cultures of Soviet Central Asia, when seen in the context of Stone Age cultures of South Asia, present a picture which brings out many comparisons as well as contrasts. Thus, in the Lower Palaeolithic there is a distinct similarity between the tool-assemblages from Karatau I—Lakhuti I and Late Soan B, all containing pebble Chopper-Chopping tools and levalloisean flakes. But in the Middle Palaeolithic the picture is not very clear. Some leading Soviet prehistorians visualize two streams of cultural traditions in the make-up of the Middle Palaeolithic of their country—one, which is called East Asiatic Mousterian, has pebble Chopper-Chopping tools (Fig. 8.1) and flakes and flake-blade tools of the Proto-Levalloisean tradition, and, two, which is called Mousterian, Classical, and is associated with Neanderthal men, has Mousterian tools of the Palestinian types. To us, the East Asiatic tradition, as exemplified at sites like Kara Bura in Tadjikistan, appears to be isolated from the Karatau Complex of the Lower Palaeolithic. Similarly, at the present stage of our knowledge, there is no specific culture-group in Indo-Pakistan subcontinent which may be taken as parental to the Kara Bura Complex, although there is a preponderance of Soan tools in it. Admittedly, large

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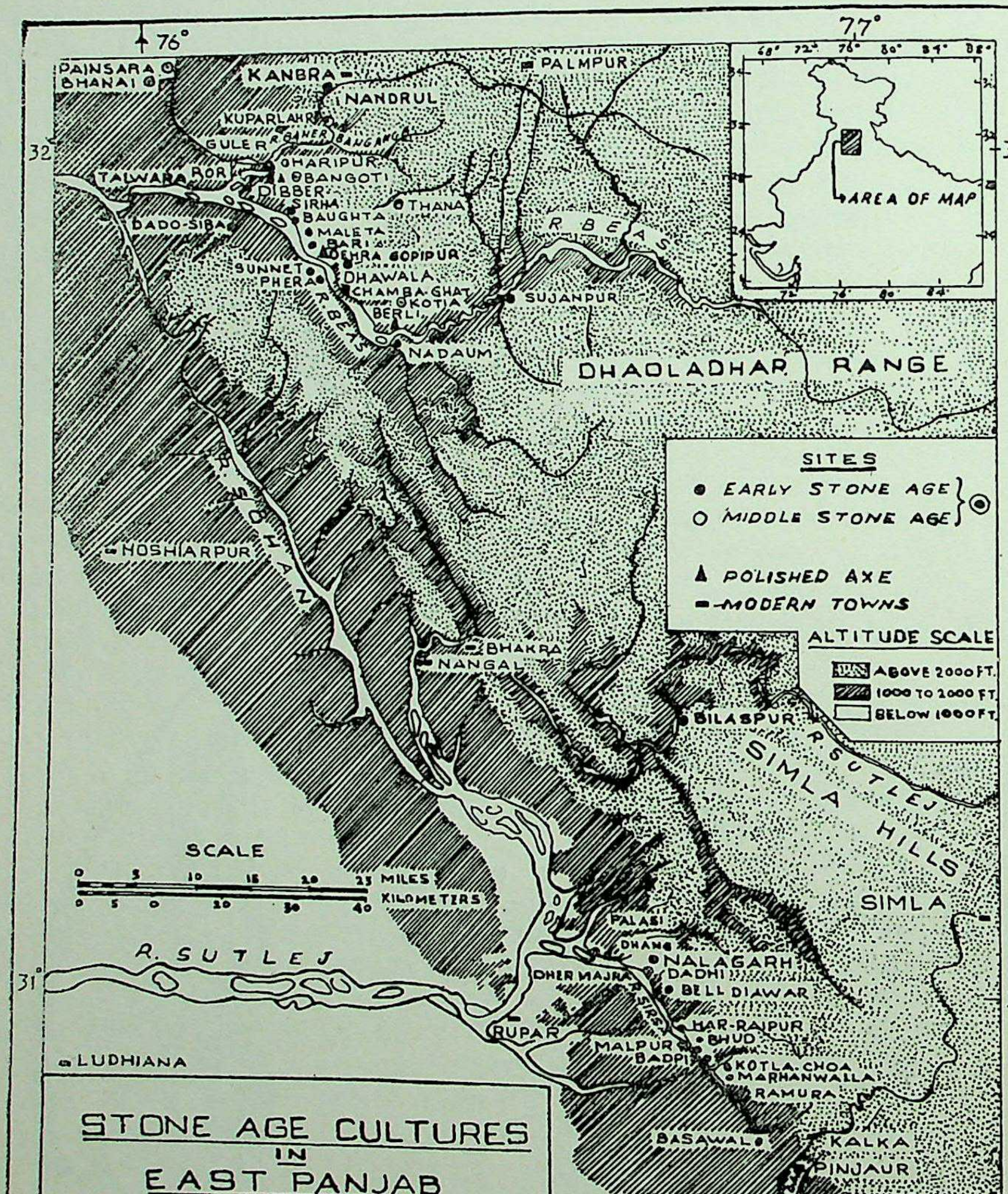
STONE AGE CULTURES IN EAST PANJAB
76°
77°
32°
31°
PAINSARA
BHANAI
KANBRA
NANDRUL
PALMPUR
KUPARLAHR
GULER
R. GANER
BANGANGA
HARIPUR
BANGOTI
TALWARA
ROR
DIBBER
SIRHA
THANA
BAUGHTA
DADO-SIBA
MALETA
BARI
DEHRA GOPIPUR
SUNNET
PHERA
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HOSHIARPUR
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BILASPUR
R. SUTLEJ
SIMLA HILLS
SIMLA
SCALE
0 5 10 15 20 25 MILES
0 5 0 20 30 40 KILOMETERS
R. SUTLEJ
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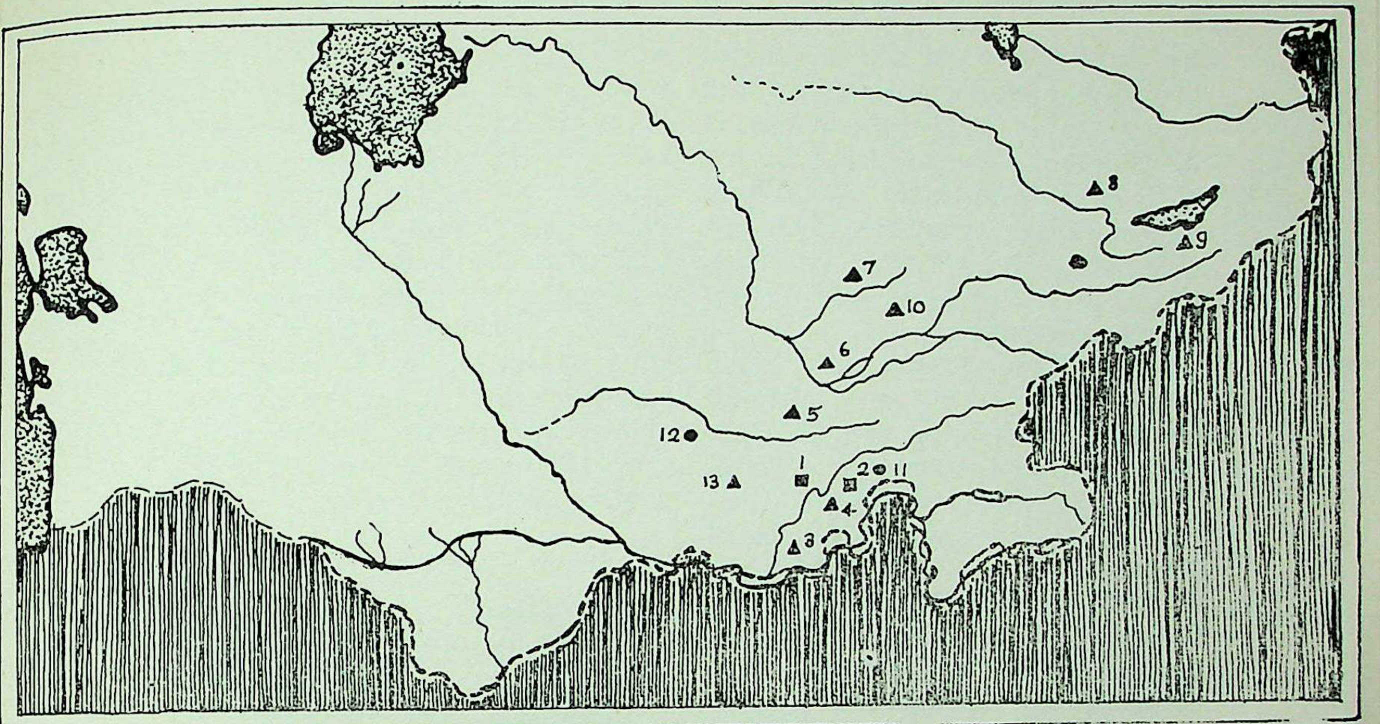
KOTLA CHOA
MARHANWALLA
RAMURA
LUDHIANA
BASAWAL
KALKA
PINJAUR
DERA-KHARAUNI
MANSADEVI
CHANDIGARH
68° 72° 76° 80° 84° 88°
AREA OF MAP
SITES
● EARLY STONE AGE
○ MIDDLE STONE AGE
◉
▲ POLISHED AXE
▬ MODERN TOWNS
ALTITUDE SCALE
ABOVE 2000 FT.
1000 TO 2000 FT.
BELOW 1000 FT.



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Of the two Afghan sites one is Hazar Sum, located in a valley of northern Hindukush, near the Oxus basin. The tool-assemblage is dominated by clactonian flakes and flake-blades. It is, however, devoid of Mousterian as well as Levalloisean elements. It is equally devoid of pebble Chopper-Chopping tools. For whatever reasons this may have been due to, environmental, lithological or technological, the fact remains that the Hazar-Sum Complex has not got the key to the hypothesis that seeks to associate the Kara-Bura (Middle Palaeolithic) complex, called 'East Asiatic Mousterian' by Russian archaeologists, with the Soanian Complex.

The other Middle Palaeolithic site is Darra-i-Kur, near Baba Darwesh, located in the Badakshan region (Fig. 8.2). It has yielded Mousterian flake-tools along with pebble Chopper-Chopping implements, the characteristic features of Middle Palaeolithic of Central Asia. To that extent, it is nearer to the Kara-Bura Complex than to the Hazar-Sum Complex.

The Pakistani site of Sanghao Cave, located in the Peshawar Valley of the Gandhara region, has a flake-blade tool complex which is typologically nearer to the Mousterian of the Levalloisean tradition but it also exhibits certain features, such as the presence of fluted cores and burins, which distinguish it from the somewhat similar assemblages existing in Soviet Central Asia on the one hand and in the Soan—Banganga Valleys on the other. Since there is no real Upper Palaeolithic blade-tool complex in Gandhara and in the Indus system it is possible that it fills up the time-bracket alloted to the Upper Palaeolithic of our region. It is common knowledge that during the last phase of the Pleistocene several local cultures grew in all parts of the world. The only common denominator was the wide-

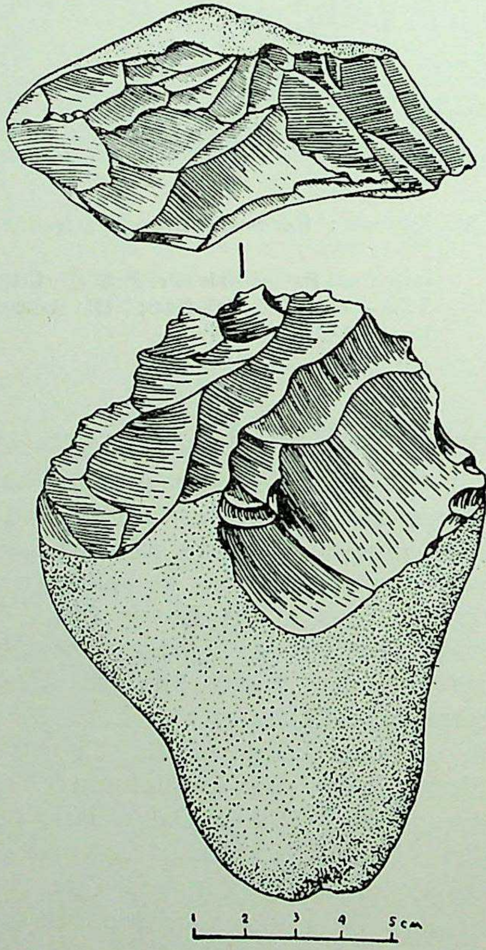

Fig. 8.1. A typical Middle Palaeolithic Chopping tool from Kara Bura

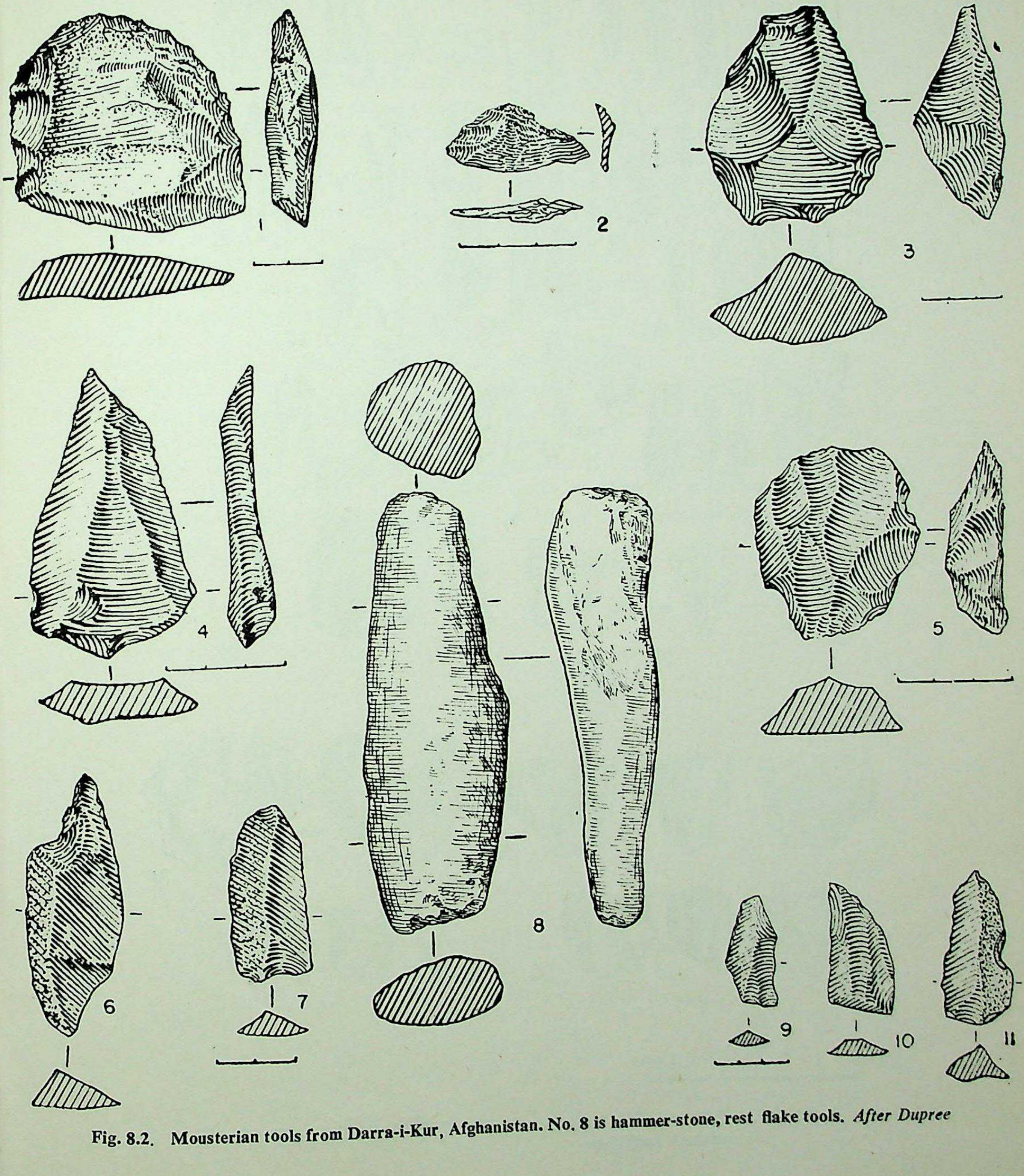
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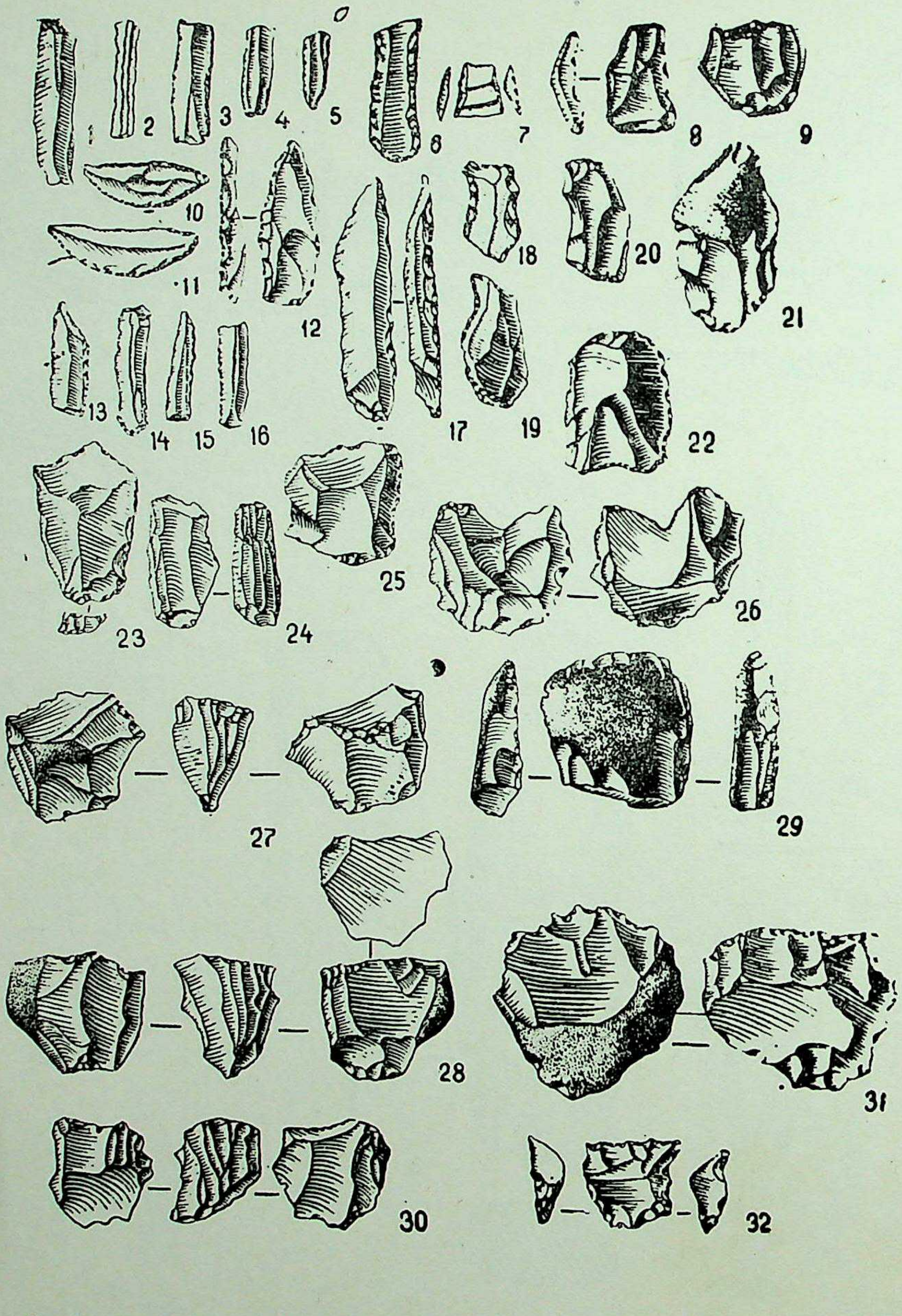
Fig. 8.2. Mousterian tools from Darra-i-Kur, Afghanistan. No. 8 is hammer-stone, rest flake tools. *After Dupree*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32
0 1 2 3 4 5 CM

Fig. 8.3. Flake and blade tools from the Mesolithic-Neolithic site of Tut-Kaul, southern Tadjikistan

spread use of flake-blades and blades for tools. Whether the Sanghao assemblage can be designated as Upper Palaeolithic or not is a moot point. Similarly, it is also not easy to assert that it was East Asiatic Mousterian. Possibly, the best way is to designate it as 'Gandhara flake-blade Complex'.

The directional changes in the flake-blade complexes of Central and South Asia were towards microlithism. The Mesolithic complexes in these regions again pose the problem of valid comparison. To begin with, there were Non-Geometric assemblages followed by the Geometric assemblages. But this was only broadly so. In several areas the two complexes existed simultaneously, both in Central Asia and India. Unfortunately, no typical Mesolithic, or microlithic, assemblage has so far been found in southern Afghanistan, northern Pakistan and the foothills of the Himalayas in India. In Sind, Rajasthan, Ganga basin, the Vindhyas and beyond, in peninsular India, there are a large number of Mesolithic assemblages but they may or may not have been related with the Central Asian Mesolithic since microlithism is the only common link between them which is a diagnostic trait but not reliable since its cultural association crosses even the Bronze Age.

Many of the Palaeolithic (Fig. 8.3) and Mesolithic tool types of Central Asia, it may be noted, continued in the neolithic levels a feature which continued in India also, and to that extent there was a perfect continuity in prehistoric cultural traditions in this part of the world.

APPENDIX I

KARATAU I—A LOWER PALAEOLITHIC SITE IN THE LOESSES OF CENTRAL ASIA

—By A.A. LAZERENKO AND V.A. RANOV

IN CENTRAL ASIA no positive remains of human life of the pre-Mousterian period have so far been found where otherwise Mousterian sites are scattered at scores of places (Ranov 1971). Isolated pebble tools, which have geomorphological connections with the ancient terraces (On-Archa, Kuehi-Pies, Bos-Barmak, etc.) do not have enough stratigraphical basis. In Kazakhstan too, there are no stratified sites relating to this period. It may be noted that in other contiguous countries also (with the exception of China), in Iran, Afghanistan, Pakisstan and north-western India, there are no stratigraphically linked pre-Mousterian sites either. Consequently, it is difficult to over-rate the significance of the discovery of the first loessic site of Karatau I, which is described here (Plate III).

The site was discovered in 1972, when A.A. Lazarenko, who carried out a detailed study of the supporting loessic section on the divide of the Yavansku ridge of Karatau in south-western Tadjikistan, found the stone tools in the buried soils at a depth of 64 and 68 metres. One of them is a semi-primary chip, with a sharply defined bulb-of-percussion knocked together from the surface of the pebble, and the other is a chip highly transformed due to secondary treatment, on which pebble-crust is preserv-

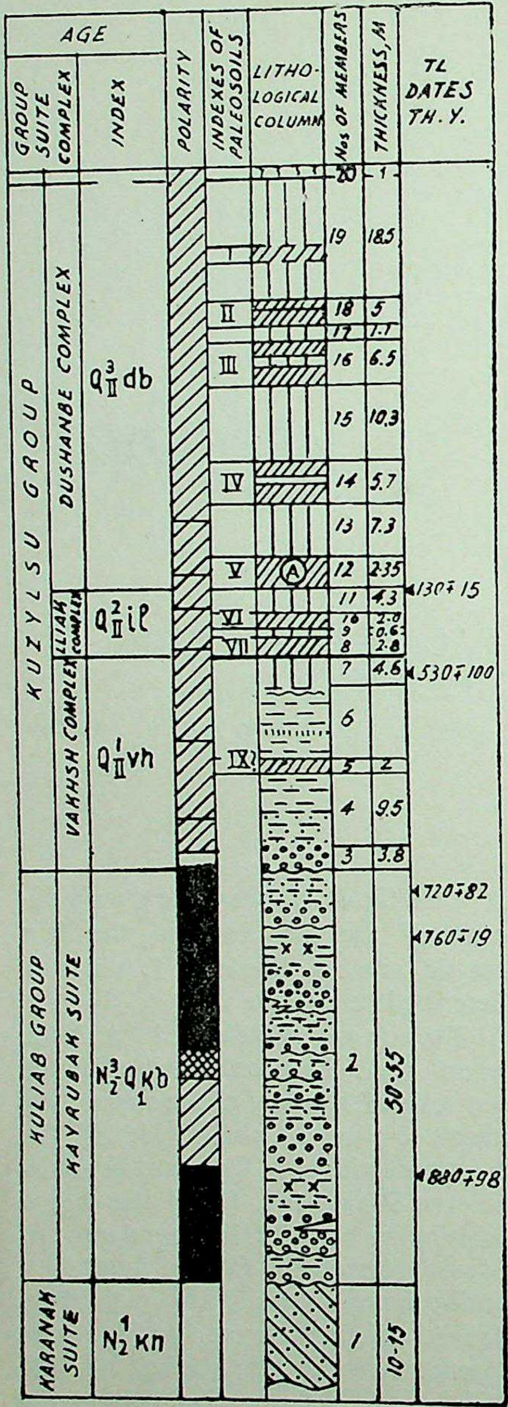
AGE
GROUP
SUITE
COMPLEX
INDEX
POLARITY
INDEXES OF PALEOSOILS
LITHOLOGICAL COLUMN
Nos OF MEMBERS
THICKNESS, M
TL DATES TH. Y.
KUZYLSU GROUP
DUSHANBE COMPLEX
$Q_{II}^{3}db$
ILLIAK COMPLEX
$Q_{II}^{2}il$
VAKHSH COMPLEX
$Q_{II}^{1}vh$
KULIAB GROUP
KAYRUBAK SUITE
$N_2^3 Q_1 Kb$
KARANAK SUITE
$N_2^1 Kn$
I
II
III
IV
V
VI
VII
IX?
A
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
1
18.5
5
1.1
6.5
10.3
5.7
7.3
2.35
4.3
2.0
0.6
2.8
4.6
2
9.5
3.8
50-55
10-15
130∓15
530∓100
720∓82
760∓19
880∓98

Fig. 9.1. Lakhuti Schematic section

ed on the impact surface as well as on the back side. The dorsal side shows marks of a series of thickening flakes running from the edges to the centre of the tool, which, as a result, formed a rough circular piece—a uniface rock-faced profile measuring 5.5×6.0 ×2.9 cm.

In 1973-74 a team of south Tadjikistan Archaeological expedition for the study of Stone Age conducted excavations here and at Khonako, Lakhuti, etc. (Fig. 9.1 and Plate I).

The Karatau I site belongs to a similar supporting section on the loessic deposit which is situated in the northern part of Karatau I ridge at a distance of one kilometre towards VUV from the village Kishlak-Utogan. It characterises one of the highest parts of the divide. The upper part of the section has been dug upto a depth of 4.5 metres on the slopping side of the summit having a relative height of 1.2 km above the level of the river Vakhsh. Further, the section opens into a row of canals on the left bank of the big ravine Yurgai-Dara, whose upper reaches stretch up to the water divide of the south-eastern (Vakhsh) slope of the Karatau ridge.

A short description of the section of Karatau I (Fig. 2.7, p. 36) is given below :

		Depth in metres
1-8	Modern soil—brown mountainous mellowed, highly eroded.......	0-0.24
2.	Loess, highly worked over by modern soil formation......	0.24-1.7
3.	Loess, typical light pale yellow (yellowing grey) uniform loam without a distinct structure	...1.7-6.3
4-5.	Incipient buried soil with a transient layer at the top-pale yellow vaguely crumbly-loam with mole-	

	hills and larvae of ancient shrews	......6.3-8.8
6.	Transient layer, pale yellow loessial loam with traces of water lamination	...8.8-10.1
7.8	First block of buried soils (pedocomplex). Consists of two well-developed reddish brown coloured soils having a magnitude of about 2 m each. Profiles of the soils are slightly overlapping and as a result clear traces of calcareous illuvialisation from the soil are clearly visible in the lower soil, at least upto a depth of 0.5 m from the last roofing	......10.1-13.8
9.	Loess, typical, similar to layer 3	......133.8-25.9
10-24	Second block of buried soils. Its construction is similar to the 1st block of soils and is also represented by two well-developed reddish brown coloured soils, divided by a transient layer of loessial loam (0.65 m). The upper soil is slightly stronger (3.1 m) than the lower one (2.45 m), however, its differentiation at the contours is weakly expressed	...25.9-32.1
13	Cracked loess with traces of water lamination	...32.1-39.35
14-15	Third block of buried soils. The upper light brown soil is less strong (1.85 m) and considerably less developed than the lower reddish brown soil (2.8 m). The latter differs from all the other buried soils of the section by a rather reddish tinge and greater amount of clay elements. It has a sufficiently well defined crumbly structure and also a strong illuvial calcareous contours	39.35-43.8
	Loess, thick, cracked	43.8-47.7
17-18	Fourth block of buried soils. It is a complexly constructed pedocomplex in which the lower part belongs to the developed reddish brown soil (3-4 m) and the upper part (2.5 m) is represented by a weakly differentiated, light brown coloured soil	47.7-53.6
19	Loess, thick, cracked. In the lower part of the layer 19, incipient soil with a strength of(1.35 m) is found	53.6-61
20-25	The fifth and sixth blocks of buried soils are drawn together. Essentially, the 5th and 6th blocks of soils constitute a single pedo-	

	complex because the transient layer 23 dividing them is less strong (0.6 m) and consists of not loess, but incipient soil. The 5th block soils consists of strong reddish brown soil (3.65 m.) which is higher along the section. It transforms into crumbly-pale-yellow soil of the incipient type (1.35 m). The 6th block of soils contains three soils, of which the upper one is reasonably developed brown soil (2.0 m), and is, to a considerable extent, superimposed on the middle, brown, developed, soil (1.7 m); the lower soil is a well-developed reddish brown soil (2.2 m)	16.0—72.5
26	Loess, thick, highly cracked	72.5—82.3
27-28	Seventh block of buried soils. It is more or less like the 3rd and 4th blocks. It consists of strong, well-developed reddish brown soil (3.1 m) too, transforming at the top into pale yellow incipient soil (1.1 m).	82.3—86.5
29	Loess, thick, highly riddled with cleavage like cracks—open upto 87.2 m.	

The lower part of the section of Karatau I remained unexposed due to technical reasons). However, judging by the data collected during a trial manual drilling and clearings, and also by the bedding character of the loessic deposit, the general strength of its section here is slightly more than 100 m, and the number of buried soils in it, apparently, is 9-10.

The structure of the loessic deposit of the Karatau ridge turned out to be rather complex. Firstly, primary sedimentation and similar other reasons resulted in the transgressive character of the bedding of rock-mass. Its strength, number of buried soils and also the age of the basal layer change sharply due to stretching, thus, for example, at several kilometers towards south-west of the support section, on the latitude of the village Mirzoye-Bolo, the strength of the divide loessial rock-mass reduces upto 20 m and out of the buried soil complexes, only the top one remains. Secondly, primary bedding of the loessial rock-mass turned out to be greatly disturbed due to neotectonics folded-arch deformations of various sizes, clear appearances of much smaller irregular disturbances, high distintegration, which at places turns into a cleavage, intensive secondary (mainly calcareous) mineralization are noticeable in many natural exposures, and also in clearings on the slopes and the divide of the Karatau ridge (particularly, in archaeological excavations also).

The excavation site of Karatau I is situated on the left slope of the deep ravine of Yurgai-Dara, 45 m above its thawleg. In the support section it is related to the 5th pedocomplex (layer 20 and 21) and lies along its stretching.

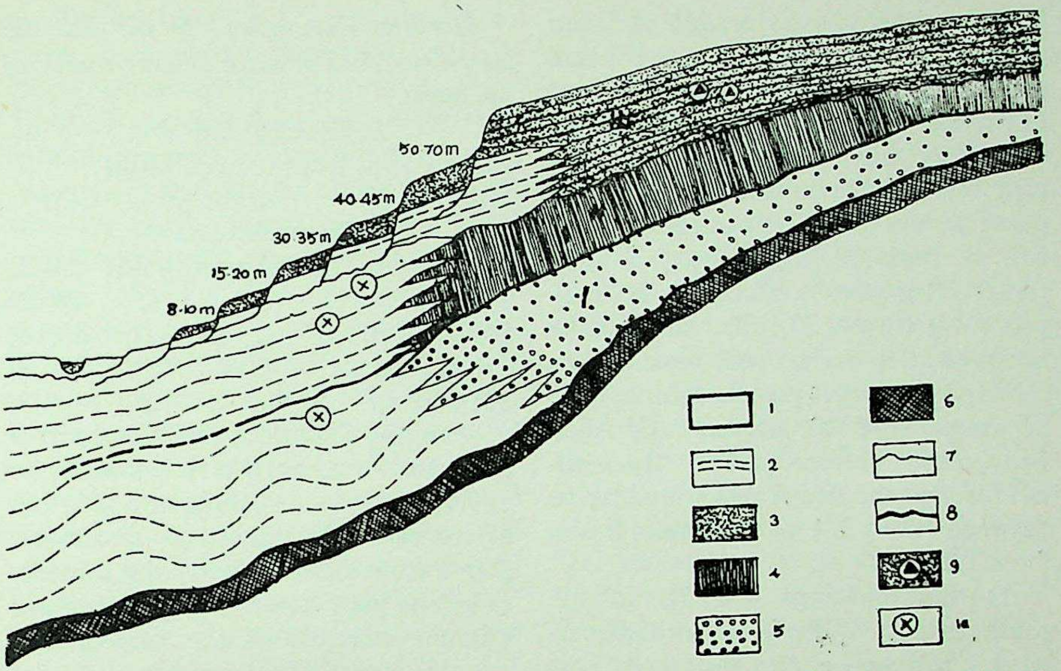

Fig. 9.2. **Reconstraction by A.Y. Dodonov. Geological and Geomorphological reconstruction of the sequence of upper Pliocene and Quarternary formations in southern Tadjikistan. 1 and Early stages; 3 Pleistocene loess; 4 eopleistocene loeses; 5 upper Pliocene doposit; 6 pre-Pliocene deposit; 7 erosion; 8 geological unconformity; 9 tools of the Karatau; 10 Different Pedocomplexes. I Kuruksay deposit; II Kayurbak deposit; III Kyzylsu deposit**

The height of the base of the excavation rises above the river Vaksh by 1125 m; the excavation site lies lower than the divide of the Karatau Ridge by approximately 45 m. At the same time, as a result of the tilt of the buried soil, as also of the entire loessial rock-mass to the west (azimuth of the dip at the point is 280°, angle of dip is 18°), the actual strength of the rock-mass lying above the excavation site comes to 64 m. Vertically, the excavation opens the basic dark coloured part of the 5th pedocomplex (layer 20-21) and partly the overlying loess (layer 19). At the foundation of the excavation site lies the thick epigenetic lime-crust crowning the lower whitish illuvial calcareous contour of the same soil (layer 21). The excavation site is divided into two parts, northern site A (squares 1-12) and southern site B (squares 16-23). Measurements of the first one are : length 11.5 m, width 4 m, average height 3 m; measurements of the second one are: length 9 m, width 3 m with an average height of 4 m. Trenches have been dug in both the sites (trench I on the site A—2.5×1.6 m; trench 2 on the site B—5.65×1.9 m.). Maximum depth of trenches in both the cases is about 7 m. Approximately 270 m³ of soil was dug out from the site and about 150 m³ from the trenches.

As a result of two seasons' work the fifth complex of buried soils has been exposed along the slope up to 20 m, and including the trenches up to a depth of 8 m into the slope.

It has been determined that palaeolithic tools are connected with the buried soils only (layer 21) and are practically not found in the loess covering the soil. Buried soil (layer 21) is an extremely argillaceous reddish grey sort, having an indistinct crumbly structure and broken by a regular system of tectonic cracks. Buried soil is replaced by overlying loess (layer 19) gradually through the incipient soil (layer 20). In view of its hardness, the buried soil was broken mostly into large pieces, which were separated with a pickaxe and then broken into smaller pieces. Its vertical force at the site A was found to be between 1.2 to 2.7 m and at site B was from 1.2 to 2.3 m.

During clearings of 1974, in the southern part of site B, it was discovered that this very buried soil (layer 21) was torn by a rupture at the time of stretching and consequently it turned out to be 2.5-3 m higher in the southern block than in the northern. The cleared section of the surface of the fault fissure (azimuth of the dip 270° angle of dip 180°) having friction characteristic to breccia and slicken side mirrors, amounts to more than 6 m².

Here on the upper platform of the site B, the buried soil is partly washed away along the slope and is covered only by a small recent layer of soil.

Worked out pieces of stone are scattered in the lower part of the entire exposed buried soil, somewhat irregular over the excavation sites. In relation to an arbitrary reference point, which in the northern site is situated 2.34 m higher than the lime crust in the square 11 and 12, the findings inside the soil are distributed as follows. *In all 144 objects have been found out of which 85 (59%) undoubtedly contain traces of deliberate treatment.*

Northern Excavation : *In all 102 objects were found of which 60 have traces of treatment.*

In Trench 1 (Exv. B)

128-150 cm. from the ref. point	
151-166 cm. ,, ,, ,, ,,	3(3)

Excavation Site B

102-150 cm. from the ref. point	4(2)
151-200 cm. ,, ,, ,, ,,	24(12)
201-250 cm. ., ,, ,, ,;	33(14)
251-300 cm. ,, ,, ,, ,,	26(23)
301-340 cm. ,, ,, ,, ,,	9(3)

The first figure denotes the number of stones found at this level and the figures in brackets denote the number of stones with traces of treatment. Depth from the reference point increases as one goes down along the slope whereas strength of the buried soil remains more or less constant.

Southern Excavation : *In trench 2, in all 30 objects were found of which 19 objects have traces of deliberate treatment.*

In Trench 2 (Exv. B)

2-5 cm. from the ref. point	1(1)
35-60 cm. ,, ,, ,, ,,	3(1)
61-100 cm. ,, ,, ,, ,,	2(1)
101-125 cm. ,, ,, ,, ,‘	5(3)

Excavation Site B

3 cm. from the ref. point	1(0)
85-100 cm. ,, ,, ,, ,,	2(1)
101-150 cm. ,, ,, ,, ,,	2(2)
151-200 cm. ,, ,, ,, ,,	5(4)
201-259 cm. ,, ,, ,, ,,	9(6)

Upper platform : *Here 12 objects were found of which 6 have traces of deliberate treatment.* Horizontally laid finds are very random in all the cases. Even a collection of 3-5 objects is rather rare. Thus 5 choppers are distributed in the rock-mass of the buried soil vertically at 1.5 m and in the horizontal projection they occupy an area of 6 m². A considerable accumulation was noticed in the square F-11, 12 (6 tools). In the southern site finds are scattered more than in the northern site. A single square metre had no more than 2 objects. It was clearly observed that in both the excavations there was an increase in the amount of finds towards the base of the buried soil.

Noticeable traces of regular cultural layers have not been found even in one trench. Small pieces of (up to 1-3 mm) separate charcoal, of unknown origin, separate colourations of soil, reminding us of calcinated lenses, have been found. Several dark bands vaguely remind of pieces of eroded cultural layer. However, presently these facts cannot be taken into consideration because, firstly, these characteristics of the contour are not very clear, and secondly, no relation whatsoever of the treated stone pieces to these interstratifications is observed. There was practically no loessial covering in the upper platform and the ancient reddish brown soil (layer 21 ?) comes out here directly on the slope. Magnitude of the preserved part of the soil along the eastern wall of the excavation is 1.2—1.3 m.

Considering the conditions of bedding of the treated stone linked with the life of ancient man in the section Karatau I, it is necessary to emphasize that the data obtained most likely show that the archaeological finds at the 5th pedocomplex (layer 21) are situated not at the place where they were made, but are in a redeposited state. Consequently, *the excavation of Karatau I exposed the ancient soil where Palaeolithic tools, which were transferred in some or the other manner by rock sliding on the slope, got deposited.* It is less possible that the excavation disturbed the peripheral part of the site unsuccessfully done or discarded tools got deposited.

Rounded pebbles served as the primary material for making most of the tools. Their petrographic composition is quite uniform. These are dark grey, with a greenish or bluish tinge, igneous and metamorphic rocks. Similar material is found in the alluvium of the Vaksh river as well as several rivers starting from the Hissar ridge. There is no such material in the Karatau ridge region. There are approximately 20% other small pieces made of flint whose streaks sometimes occur in palaeogenic lime-stones surrounding the ridges. In most of the cases the surface of the tool has weathered and has a patinated character. Patina is particularly noticeable on several flints, where it acquires a deep reddish tinge. Moreover, several objects from the buried soil have a very fresh non-patinated surface.

The quantitative ratio of various types of finds is given below:

Splinters and fragments
—31.
Chips
—27 : With traces of retouching
Choppers and their pieces
—9
Tools (?)
—8
Large pieces of chips—4
Nucleus shaped pieces—6

Considering the collection as a whole, first of all it is necessary to point out the absence of any developed nuclei and, consequently, the absence of the tendency to prepare plastin and lamellar chips, *i.e.*, a product obtained from specially prepared nucleus. Here chips and splinters with traces of work

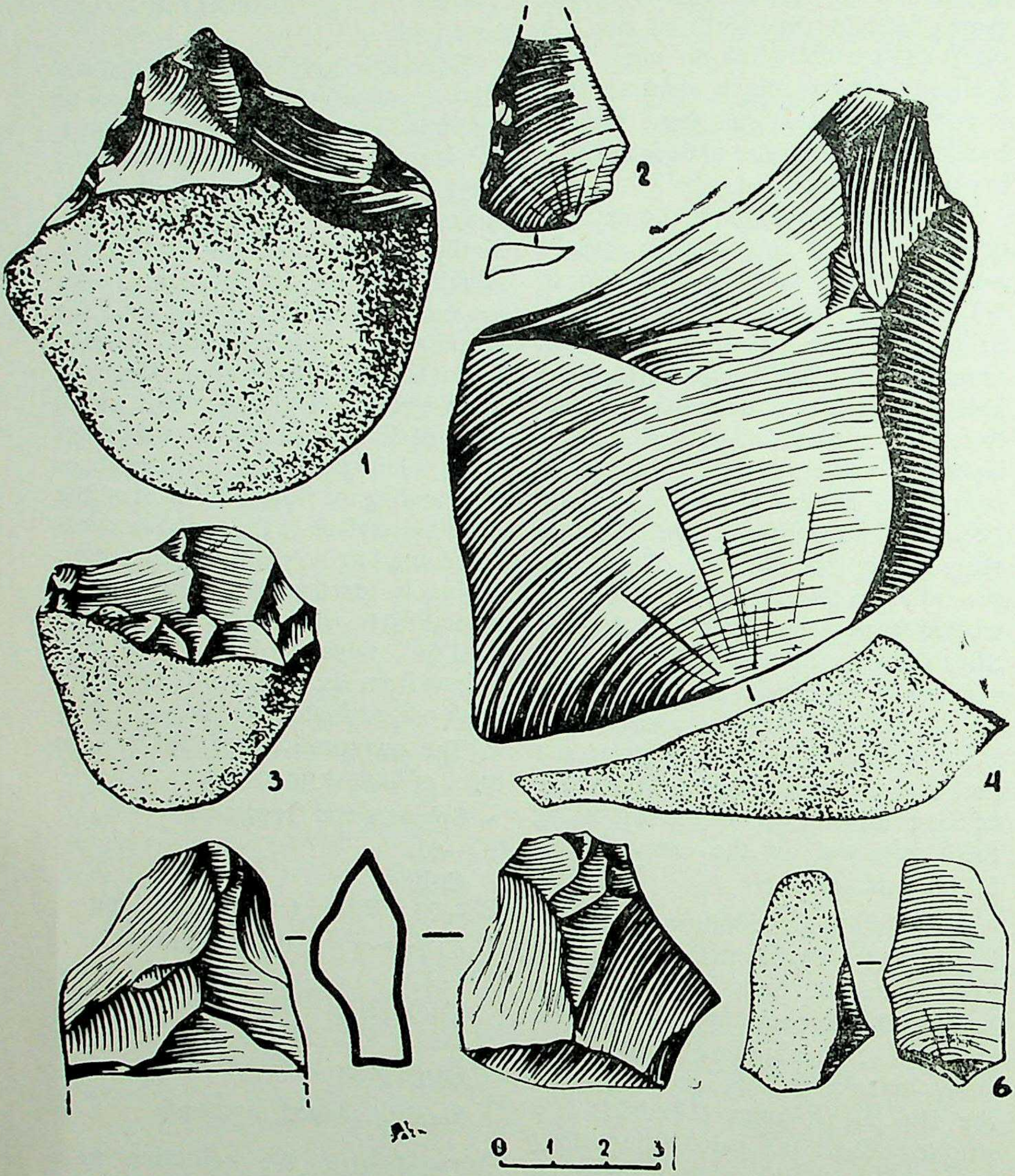

Fig. 9.3. **Lower Palaeolithic tools from Karatau I site, southern Tadjikistan. The tools have been found from Pedocomplex V.**

No. 1 is a pebble chopper; No. 2 is a flake; No. 3 is a pebble chopper; No. 4 is a big primary flake from a pebble; No. 5 is a broken end of a bifacial (?) tool; No. 6 is a primary flake

are primarily, the result of rough chopping off the pebble edges for making a primitive chopper like tool or by other means inherent in the chopping off technique. Reference point is also rarely found that is why eight tools that we have taken into consideration have bad typological expression.

All these characteristics, from the point of view of development of the technique of stone splitting, can be considered as manifestations of very ancient, type reflecting on the antiquity of the sites. Moreover, *many elements noticeable in the technique of tool production in the Karatau complex are also observed in other industries belonging to the "pebble cultures" period of Central Asia and surrounding countries and also in the Hissar neolithic culture.* Taking into account this characteristic, one should not pay much attention to the apparent archaism, the more so as we have little material at our disposal, possibly reflecting only one part of an industry, very complex and diverse in itself.

TOOLS :

Eight tools do not have any clearly expressed features and do not form a uniform type. The category of tools in the northern excavation-site includes chips cleaved along a long axis, resembling a blade with a back edge; flint scale with precipitous choppings, projecting the edge and unstable, badly defined nucleus-shaped scraper with a working edge projecting several narrow facets on the semi-primary chips. The category of tools in the southern excavation-site include flint fragments with small uniform retouching; a chip 8×9.2×3.1 cm. in size with nebular, denticulate finish along the edge, done on big prolonged-oval facets ; another scraper like tool also has a serrated finish; nucleus-shaped fragment with narrow elongated chipping, supported on a narrow platform, sepcially smoothed out chips, the working edge resembles the blade of a scraper (as in museau). The small irregular finishing is fixed in other cases; however, it is not clear whether the finishing was intentional or was formed during the process of work refer to (Fig. 7.3 on page 116).

Choppers : Choppers form the most clearly expressed and noticeable groups of tools in the collection of Karatau I fragments. Their size ranges from big (11.9×8.1×4.6 cm.) to small ones (4.7×6.0×3.4 cm.) (Fig. 9.3).

They can be divided into the following groups, according to their types: choppers with convex working edge—5; choppers with projecting subtriangular working edge — 3; choppers with a straight working edge—1. Among them one is on flat rolled river pebble, four on flat convex, one on double convex, two on split up and one on the chip. In two cases the working-edge occupies 3/4 of the pebble's perimeter, in four about 1/2, and in three of them less than 1/2. Diametrical disposition of working edge in relation to the long axis of the pebble is thrice, longitudinal disposition also thrice, and in one case the entire part of the split-up pebble is treated. Khonako II has an oval chopper (Fig. 9.4).

Chips : This category constitutes only 22% which is not a large percentage for tools which generally form the most representative group among palaeolithic collections.

Measurements of chips are extremely varied. Facetted platforms were not observed, smooth straight impact-platforms are prevalent and are formed either by one chipping or is covered by pebble crust. In such cases narrow impact-platforms and very small conical impact-tubercles (bulb-of-percussion) are very common. The average length of impact-platforms is 2.2 cm., its average width being 0.8 cm. The angle between the impact-platform and the cleaving-surface varies, but, on the whole, it is obtuse, from 105° to 130°. An angle of 110° is more common. Cut of the chip-backs (flake-scars) basically has a haphazard character. There are 2-3 chippings in different directions.

It is necessary to point out that chips at Karatau I site, in general, differ immensly from the samples of the so-called Clactonian type, characteristic of the early palaeolithic technique. For a long time, the Calctonian type of stock was considered synonymous with the pre-mousterian technique (Breuil 1932). His term is understood in this manner in later works also (Alpisvayev 1959; Praslov 1968; Collins 1968).

Materials obtained from the Karatau I site show that the pre-mousterian cultures could develop in a different manner and still be connected with the so-called pebble technique. This connection with the pebble technique is determined by the fact that in the practice of breaking up of a stone, the tendency to attain a perpared nucleus is not observed. Chippings were done mainly by vertical blows on the pebble edge. Practically every time the chips obtained were not as desired while cutting the working edge of a chopper or chopping tool. Lakhuti and Khonako also prove it (Fig. 9.5).

The basic characteristics of a chip, a product of treatment of the chopper-edge (pebble nucleus?), are : comparatively smaller size, haphazard cut, impact-plane incorrect, irregular form, very much tapering to the haked of (chipped) surface, flat or otherwise distant, impact-tubercle (bulb-of-percussion) conical which was often mixed with the chopped platform.

Only a small number of chips have been removed from a more or less ready surface on the nucleus. There is atypical chips of second removal and a fragment of comparatively richly-edged laminated chips of the same type.

Splinters and Fragments: Generally this category of finds belongs to the 'discard', and does not find a place among the typological classification of tools. Undoubtedly, out of the 31 objects of this type, a large part represents by-product of the preparation of pebble tools. Moreover, some part of similar splinters was used by the ancient man as material for making tools. As an example, we can cite two splinters having secondary finish.

In the industry of Karatau I, there existed another specific method—method of breaking up a pebble to obtain a wedge-like splinter with a wide pebble crust section. Such a piece resembles the lobule of an orange and can be used without additional preparation, as tools *a' dos*, *i.e.*, tools with a back edge, most often knives. The 'citron' or 'quartier d'orange'-"orange lobule" technique is known in the case of very ancient cultures of Africa (Biberson 1966). C. Vertes attached great significance to this technique because of its wide occurrence in the sites of the type of Vertessollesh (Lower Palaeolithic culture of Buda; Vertes 1970).

This group includes small wedge-like fragments with a small pebble-crust section, oval or sub-quadrangular. As in the first case, the impact-tubercle (bulb-of-percussion) is not traceable and the plateform not exposed clearly.

Had the 'orange lobule' technique been deliberate, the splinters of the second group would have partly been obtained by chance (randomly) : there occurred natural dripping off due to impact along the edges which increased due to cracks resulting from the previous impact.

On the whole, probably, it is necessary to pay greater attention to the fragments having similar character.

Nucleus shaped tools : As already mentioned, not a single well-defined nucleus has been obtained from the Karatau I site. There are six objects belonging to the nucleus-shaped tools or, in other words, badly defined nuclei chips detached from them because of non-erosion of the nucleus surface. They do not, in any way, differ essentially from chips obtained by processing stone tools. This again emphasizes the the peculiar character of the technique of breaking up of stones, which is observed here.

In conclusion, we shall refer to the tools resembling a scraper-nucleus or a cubiform nucleus with two narrowing platforms. There are three facets of previous chipping of narrow knife shaped tool tip on the working surface. A projection has been formed on one of the specially repaired planes, which resembles the tip of a cape-like nucleus scraper, 'a museau'. Separate parts of use and crumbling of the edge are observed on the shoulders of the edges.

Most likely the scraper-nucleus is functionally a combined tool, later converted into a hammer or retoucher-squeezer (Semenov 1957). Along with the tool described above another scraper with a serrated blade with projections (3.5×2.3×1.8 cm.) was found in the square E-16 of the southern excavation-site at a depth of 214 cm. from the reference point in the buried soil. Both the objects were prepared from brown silicon nodules which is very common among the materials of much later excavation sites of the Yavan valley. In the Karatau collection there are no other tools made from this kind of material.

Archaeological dating of the material found at Karatau I has become extremely difficult mainly due to the absence of typologically clearly defined forms and technical indications in the collection, which could be compared with well-known and accepted groups in the palaeolithic archaeology. From a purely formal point of view the time range, in which we find one or the other technical methods, traced at the described excavation site, is in fact unlimited.

Thus, for example, badly defined chips and angular fragments found at one of the world's most ancient excavation-sites of the Stone Age man at the river Omo is Ethopia and dated to 2.6 million years, published in the preparatory report of the International Expedition led by Khauella (Merrik *et al*, 1973) very much resemble the cuneiform splinter and chips found at Karatau I*.

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*A detailed study of the technique of preparing pieces of this type is still to be clarified. We do not consider the method of breaking up of pebbles, described in V.Gabori Csanks (1968) satisfactory.

On the other hand, at our excavation-site there was not a single isolated technical method or type of tool which could not have been found among the materials of Hissar (or Gissar) Culture of the Neolithic period.

The fact that the most of the well-known pebble cultures of Asia, such as the Soan Culture, have not yet been sufficiently described, gives rise to additional difficulties. Soan's elevating material contains summary descriptions of the most conspicuous groups, but there are no percentage ratio between the distinguished categories, descriptions of popular materials is missing as well as a strong stratigraphical basis (Movius 1944; Paterson and Drummond 1962; Graziosi 1964; Sankalia 1965).

Thus, we have to depend upon the stratigraphical situation, geological dating and TL age of the site.

According to the data collected by the theromluminescent method (determined by V.N. Shelkoplyasa IGN Academy of Sciences, USSR), the age of the 5th pedocomplex at the site of Karatau I in the monomial support section can be put at 200,000 years. This figure is the mean result of two datings : (1) 194,000± 32000 years of the upper loess (layer 9, depth 60.0 m—72-60 m) and (2) 210,000±36000 years of the lower incipient soil during the 5th and 6th pedocomplexes (layer 22, depth 66.39 m)

We have clearly mentioned that according to general characteristics the industry of Karatau is nearer to the later Soan than earlier (Lazerenko and Ranov 1975)

Geological date of the later Soan, determined arbitrarily, mainly on the basis of geomorphological indications, corresponds to the third glaciation of the Himalayan glacial chronology, which is often compared with the scheme adopted for the European Alps. In the recent works of Indian archaeologists, there is a tendency to relate the later Soan to the Middle Stone Age of India and compare this culture with the Mousterian Culture of Europe and in terms of Wurm period (Misra 1972).

Here it is necessary to take into account the extreme sluggishness of the 'pebble technique'. Different types of tools in the pebble cultures remain practically unchanged from the early palaeolithic to the neolithic.

In Central Asia we do not have stratigraphical finds of Acheulian or early Mousterian which would be compared with Karatau I because, according to us, all palaeolithic tools found in the loessic peposits covering the regional terraces of the Tashkent (Iliak) complex (which are arbitrarily related to the Middle Pleistocene) were actually located not in the illuvium of these terraces or on the synchronised denudation surfaces, but in the much recent covering rock-mass.*

It is necessary to emphasise particularly the significance of the re-opened site for explaining many complex problems in the study of loesses, not only of Central Asia but also of eastern countries. With the exception of the well-known sites in the middle current of the river Khuankhe (Lan Tyan, Keikhei, Dinsoon) there are no ancient palaeolithic loessic sites either in Iran or in Afghanistan, and neither in the Soan Culture zone in Pakistan nor north-western India (in Himachal Pradesh).

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*There are other assumptions (See Ranov and Nesmiyanov 1973, pp. 147-149).

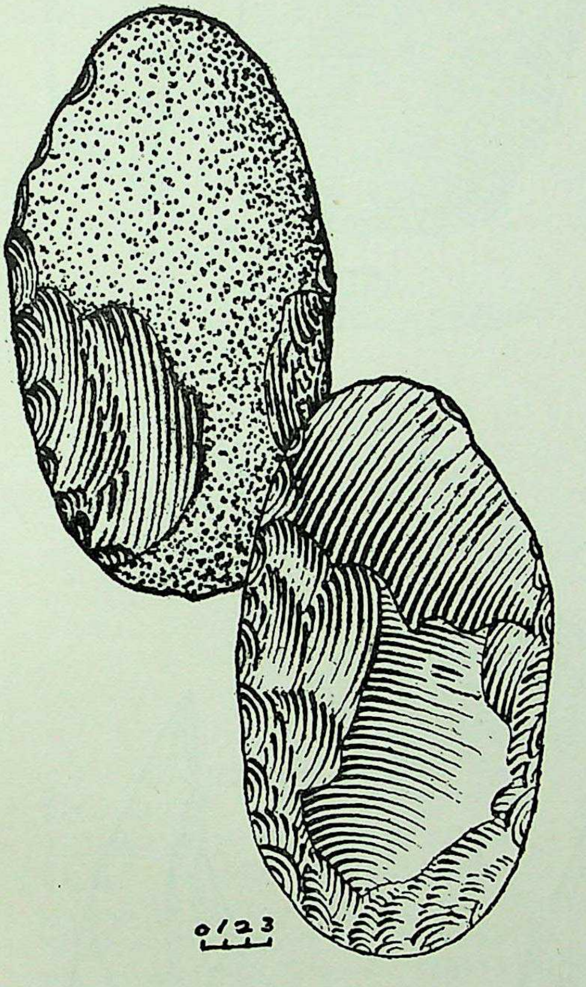

Fig. 9.4. A Pebble Chopping tool from Khonako II

A comparison of Karatau I with the Chinese materiais right upto the obtaining of much wider volume of collection is very difficult. Places near Lan Tyan and Kaikhei, which are dated before the early Middle Pleistocene (Larichev and Kashina 1969; Larichev 1970) have more common features than Dinsoon, whose age has recently been fixed as Upper Pleistocene (Movius 1956; Aigner 1974). However, it has yielded some handaxes and it shows somes imilarity in chipping technique with Karatau I. Such handaxes have not been found at Karatau I. As far as Dinsoon is concerned, which is similar with our sites, we observe considerably more elements of developed Levallois technique and the technique of double treatment.

In 1974, A.I. Dodonov discovered two more places in southern Tadjikistan where chips and fragments, very much resembling tools from Karatau I, were found in the buried soils having a mode of bedding similar to the soils of Karatau I (Dodonov and Ranov 1976).

Thus, we can mention the presence of a special palaeolithic culture linked with the buried soils belonging approximately to the end of Riss (Glacial) and beginning of the Riss/Wurm (Interglacial) period in the south of Central Asia. This culture, judging on the basis of the site of Karatau I, described above, in all probability, belongs to the period of developed pebble cultures, separate evidence of whose presence were observed in Central Asia even earlier (Ranov 1965). Moreover, further studies can reveal the presence of Levallois stone chipping technique also in the sites of this culture. This is supported by the discovery of one excellent piece—point—at the base of the 4th pedocomplex of Karatau II. The main task of future work shall be to find sites where the cultural layer is preserved.

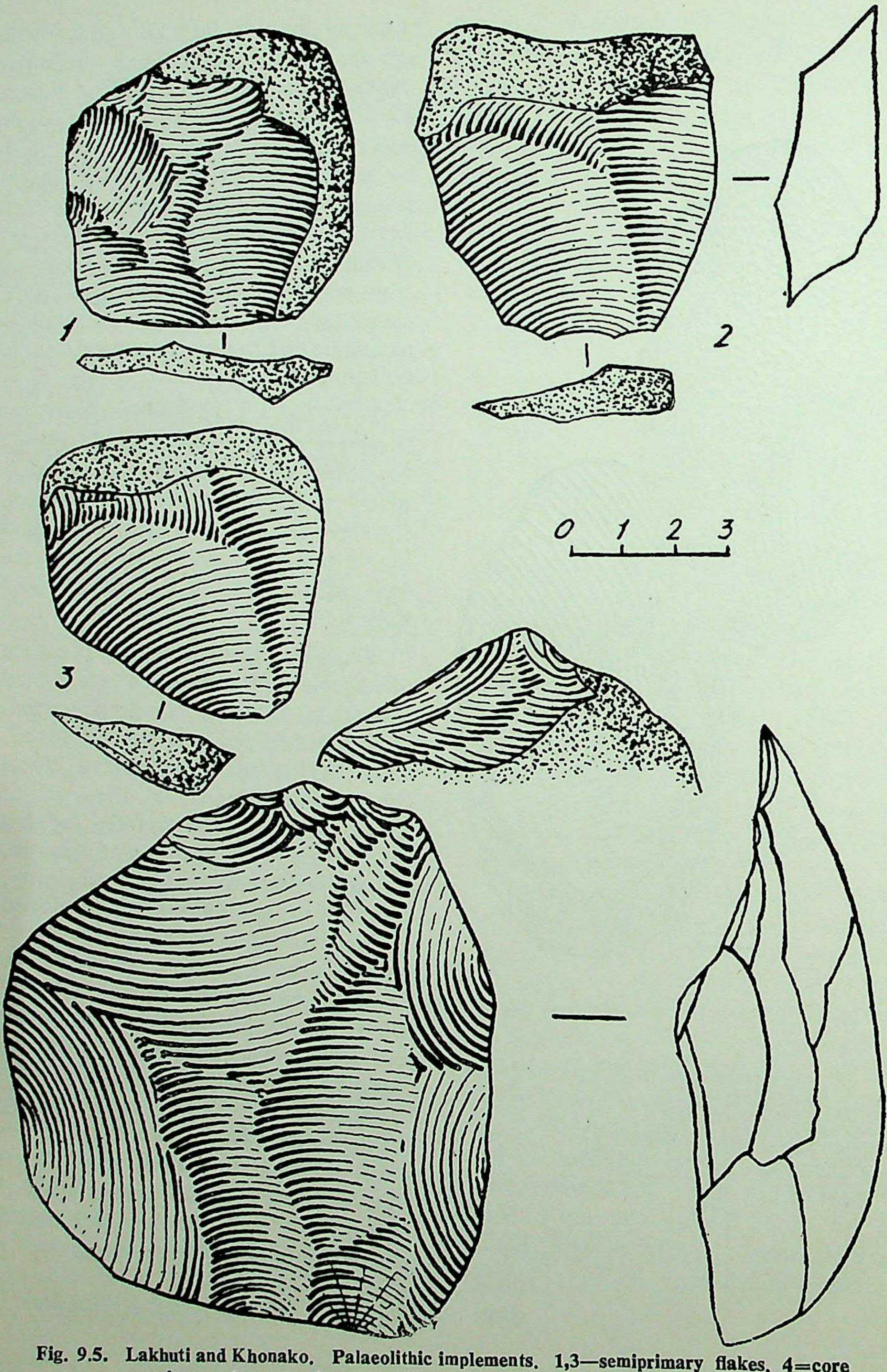

Fig. 9.5. Lakhuti and Khonako. Palaeolithic implements. 1,3—semiprimary flakes, 4=core or cleaver. 1—new point east of the Lakhuti II section, 2-4—Khonako III

APPENDIX II

THE PAMIRS AS MAN'S HABITAT (Abstracts)

—BY V.A. RANOV and I.F. SIDOROVO

IN 1956-1959 and 1960, single groups of teams of the Tadjik Archaeological Expedition (TAE), headed by one of the co-authors, carried on Stone-Age research in the Pamirs. The extent of exploration was considerable. All major valleys and lake-depressions were examined. Unfortunately, no search was undertaken at the western end of the region, in the valleys of West Pshart and Belyandkiik, some portion of which could undoubtedly have been suitable for prehistoric man's life. The number of caves and grottoes examined is certainly insufficient (16 in all). There were three excavation sites: the Osh-Khona site on the Uisu River, the Kurteke shelter and the Shakhty grotto, 40 km south-west of the village of Murgab. Small-scale excavations and test-pits were made in some cases.

Altogether, 50 spots of Stone Age finds were registered in the Pamirs during the four field-work seasons, giving a collection of more than 15,000 items. The average absolute altitude of the sites is from 3,500 to 4,200 m.

Of the 47 localities, excluding two grotto sites, 20 are those of river terraces, 14 are those of moraine surfaces, five occur at alluvial fans, four at the ancient erosion ledges of the ancient valley bottoms, etc. Two sites, discovered by O.V. Golovin at

Shursu and Bashgumbez, remain unrelated geomorphologically.

With the exception of two, all terrace sites are of post-glacial first and second over-flood plain levels. Sites at Murgab and Karasu, where chipped stones have been discovered at the surface of terraces from 20 to 30 metres high, are undoubtedly related to much older Pleistocene formations.

Open-site Stone Age implements vary in number, from several items (6 for Yashikul, 13 for Akdzhilga, etc.) to several dozen (35 for Chechekty, 84 for Kulakkesty, etc.) or even several hundred (518 for Izvestkovy Kamen, 490 for Karakul, etc). Only flaked stones have been collected in all cases. No trace of pottery, nor bones, has been found at the open sites.

OSH-KHONA

Osh-Khona is the only prehistoric site so far discovered in the Pamirs showing a preserved culture layer. It is at an altitude of about 4,100 metres, at the southern slopes of the Trans-Alai Range, near the foot of the Kyzylart Pass. The tongue of the contemporary glacier Uisu is just 15 km away from the station and the Lenin Peak, the highest point of the Trans-Alai mountains, 30 km away on the straight. The site is situated on the right hand side of the Uisu River valley, where the Oskhonazhilga River empties into it (Plate IX).

The Osh-Khona materials enable us to describe the physical conditions of the past and we shall do this in due course. At present we are going to touch upon some of the peculiarities of the materials. Unfortunately, most of the bones collected at Osh-Khona defy identification. N.K. Vereshchagin and R.L. Potapov have done their best in this matter. The animals that the inhabitants of the settlement could hunt include large mammals (Ovis Capra), rodents (chiefly hares and marmots) and birds. One of the bones suggests the kulan's metapodium, but as N.K. Vereshchagin holds that there is no sufficient ground to identify it as such. The fire-places have preserved some charcoal remains which have enabled one of the co-authors and I.A. Shilkina to identify the wood : the *Betuta Juniperus* and *Eurotia ceratoidies* shrubs that were used as fuel. The pollen of xerophytic shrubs and grasses has been found by M.M. Pakhomov to predominate in the river deposits of Osh-Khona, while the pollen of woody plants is virtually nil. The testimony of charcoal seems much more significant than the data of pollen analysis in the present case, since woody plants, as O.E. Agakhanyants believes, could not have been brought to the settlement because no means of transport capable of hauling timber over several dozen miles was yet known at that time. Nor can one probably conceive that they carried it on their back. Whatever the truth is, however, the *Eurotia ceratoides* which grew, and still grows around the settlement, proves an excellent fuel. The investigations of the caves and grottoes have revealed some interesting evidence in this respect. To begin with, we must note that the deposits of the rock shelters examined in the Pamirs can be divided into the upper horizon which is of dry dust containing, as a rule, the remains of the later epochs (not older than the developed Neolithic) and which apparently formed in the Holocene, and the lower horizon, chiefly of broken stones, sometimes in dense cabe clay, and apparently dating from the Pleistocene. In the broken stone deposits, a culture layer in the form of fireplace remnants and broken bones, and showing no finds of tools, has occurred only once (the Djamantal Cave on the Karasu River). In all other cases no remains associated with human life were found when the deposits synchronous with the latest glaciation (?) were disclosed. Some young Holocene deposits have been studied in detail at Kurteke, where two sites, the Shakhty grotto and the Kurteke shelter, have been excavated. The shelter has proved more interesting, showing two horizons: the upper one dating from the Bronze Age, and the lower one dating from the Neolithic (Aeneolithic?). A small pit (10 sq. m.) has been laid within the shelter which is rather small (12 metres long and 3.5 metres wide). The upper horizon is a dry dust mass with humus-adobe layers. Fireplace scorches have been found, as well as a large hearth, 70 cm long and 10 cm thick. Culture still appears quite uniform and no chronological stages have been marked in it. As research gains ground, however, it will be possible to mark such stages. The use of river pebbles as the base of tool workmanship is primarily typical of the Gissar industries. Pebble cores, similar to the Pamir one, are very common. Large crude scrapers or chopping tools seem to have been made from pebbles. As far as the character and assortment of tools are concerned, the Gissar culture is strikingly different from the well-known Neolithic cultures of the plain part of Soviet Central Asia : the Djeitun and Kelteminar cultures. The only thing we are going to stress here is that they show a well-developed blade technique and tools based on the stable forms of regular knife-like blades. Djeitun is a well-pronounced farming culture. Kelteminar is a culture of hunters and collectors. As to the Gissar culture, its economic foundation is still obscure. There is evidence to regard it, as A.P. Okladnikov does, as a culture of the first land-cultivators of Tajikistan.

Fergana is a neighbouring terrain to the Pamirs and at the same time relatively easy to access. In the southern fringe of the valley, a small amount of implements similar to the Gissar ones seem to have been discovered, whereas in central Fergana Y.A. Zadneprovsky has brought to light an entirely new culture: a microlithic culture in its own right. Differing from the Kelteminar sites of the Bukhara oasis, it forms a special varient of the Meso-lithic-Neolithic blade cultures.

What stations the mountain areas of Kirgizia are likely to fetch we cannot tell. It is interesting to note that A.P. Okladnikov has found a small group of stations, undoubtedly of the Gissar kind, near the city of Frunze, and Sh. A. Kadyrov has collected at the high altitude lake Chatyrkel flints flaked by man, enabling us to compare them with the Pamir material. Another important factor is established recently. Remains of vegetation occurs. Among the animal remains, P.L. Potapov has identified bones of Capra or Ovis, a tooth of the ass (?) and bones and feathers of birds, including those of the mountain turkey. The lower horizon contains meagre layers of charcoal identified as fireplace remains between layers of river sand and gravel.

UPPER PALAEOLITHIC SITES

In Soviet Central Asia two groups of Upper Palaeolithic cultures occur. Such stations as Khodja-Gor, the settlement on the Krasnovodsk Peninsula and the third layer of the Kara-Kamar cave, Afghanistan, find analogies in the cultures of different stages of the Upper Palaeolithic of Western Asia. The second layer of Kara-Kamar cave and the Samarkand settlement seem to belong to another class of cultures, namely, the Asiatic cultures.

GISSAR NEOLITHIC SITES

What Stone Age cultures, that is, the Late Palaeolithic and post-Palaeolithic items, do we find outside the Pamirs? The Gissar Culture, which is well studied at Tut-Kaul, (Plates VI, VII XI) was common in West, Central and South Tadjikistan and some mountainous parts of Soviet Central Asia. This peculiar culture presents the so-called mountain Neolithic. The roots of this Neolithic culture, however, go back well into the local autochthonous cultures of the Upper Palaeolithic or even Mousterian. On the other hand the new finds defined by S.N. Zamyatin in 1951 have expanded the range of the Palaeolithic of the Siberian or, to use the more common term, Siberian-Mongolian type, west of the Irtysh Rivers, up to Central Kazakhstan (Sari-Arka).

SINKIANG

Sinkiang has been archaeologically little studied. A new setttement in the eastern part of the region is to be added to the stations we have referred to for the sake of comparison.

INDIA

In the south and south-west of the Pamirs we find the well-known rich Palaeolithic sites of the Punjab. As to the small-scale investigations of the post-Palaeolithic cultures, no new studies have yet been published, while H. de Terra's previous works have led to the discovery of much later, Mesolithic cultures. These industries, in our opinion, show a definite similarity the Gissar culture.

CONCLUSION

Analysis of archaeological material shows that the technique predominant for the Pamirs as a whole is one similar to that which is typical of pebble-type cultures resembling the Gissar type and Palaeolithic cultures of North-West India, East Tibet and to a certain extent the Siberian-Mongolian Palaeolithic and its derivative post-Palaeolithic cultures.

Post-Script

A LONG interval of time has passed since the manuscript of this volume was prepared. It is, therefore, advisable to include the details of the Shougnou Upper Palaeolithic site now available to us, as also the news of some recent Stone Age discoveries. For this information the author is indebted to Dr. V.A. Ranov.

EXPLORATIONS IN SOUTH TADJIKISTAN

SHOUGNOU

As mentioned earlier, it is one of the two outstanding Upper Palaeolithic sites of Soviet Central Asia; the other one is Samarkand. Located in Southern Tadjikistan, on a 80 m high terrace, with 15 m thick loess deposit on its top. It was excavated for two field-seasons—1968/69 and 1969/70—by V.A. Ranov. Since then its material has been under close study by the excavator.

The stratigraphy in the loessic-silt is not easy to determine, but it goes to the credit of the excavators that they have been able to distinguish five levels of occupation. The top-most level (therefore latest) is Mesolithic (earlier, it was called 'O', now it is called 1 also). Below it, there are three Upper Palaeolithic levels (1 to 3 or 2 to 4). The lowest level (4 or 5) represents the Final Mousterian or Incipient Upper Palaeolithic (Fig. 10.1). It is significant to note that the lowest cultural level is located within the alluvial-loessic and silt contact-line while the rest are located in the loessic silt.

Unfortunately, none of the cultural levels has yielded the remains of hearths, etc., with the result we have (except in (one example in Level 2 of the old scheme, where some charcoals is found; (in fact, rewashed and, therefore, not very much reliable for ^{14}C date), no material for the radiocarbon dates.

In faunal remains also, the site is very poor. Still the deer, horse, marmot, etc., have been identified.

The first Upper Palaeolithic layer lies at the depth of 4.5 m (Level I of the old scheme). The characteristic type that it includes is carinated scraper. Typical 'museau' is also there. The other types include blade-nuclei (along with the micro-prismatic ones), short blades (strongly curved in longitudinal profile), end-scrapers, borers and points). The Radiocarbon date of Level 2 is 10,700± 500 B.C. which Ranov feels is too young.

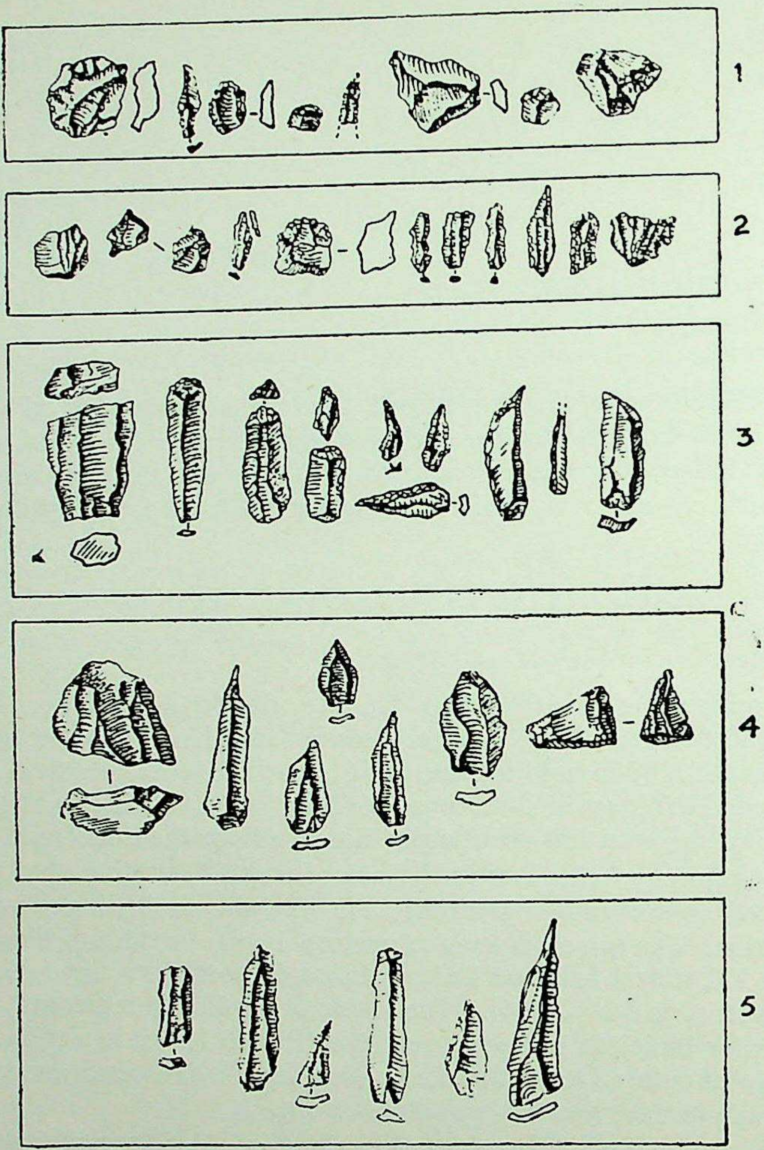

Fig. 10.1. **Sequence of stone tools at Shougnou Upper Palaeolithic site. Level 5 is Mousterian, Level 1 is Mesolithic; the rest are Upper Palaeolithic**

At a depth of 5.5 m Level 4 is encountered. It is the richest level of the Upper Palaeolithic since it has yielded more than 2000 pieces. Here there is a marked change in the flaking technique. It has Mousterian element also. However, prismatic cores, and blades with thinning along the dorsal side, are also there. Thus, the most popular type is point on blades of this kind of 'point a dos', often with marginal retouch. The end-scrapers are big and thick. There are a few Gravettian type points also. Ranov proposes 25003-2800 B.C. date for this level.

The second and third Levels have yielded a large number of blanks and tools. Some of them exhibit Mousterian technique. In fact, in the fourth level some Mousterian blades of very good quality, exist similar to those found at Khodja-Gor Middle Palaeolithic site.

OGZI-KITCHIK CAVE SITE

Ranov has now finished his five seasons' work at this site. The site has proved to be richest in Mousterian tools—10,000 or more have come from regular layers. They include a large number of classic examples of points, scrapers, retouched blades, knife-blades, etc.

KHUDJU

In the spring of 1978 V.A. Ranov and V. Yakuob explored a new Mousterian site, probably representing the final stage of this culture. It is located at a distance of 40 km. west of Dushambe. It appears to have been subjected to water action in the past. The cultural layer is situated under a 30 m mass of the loessic silt. The fire-places at this level were disturbed by water-action. However, there is a very long, some 20 m, charcoal layer running in the section. It is felt that it was the deposit of the re-washed material.

The lithic tools from the site is very rich which include a collection of 6000 blanks, including the Levallois-Mousterian variety. The tool-types include Levallois points, knives, side-scrapers on blades, scrapers on flakes, and flake scrapers. Prismatic blades and unipolar and bipolar blade-flake cores are also included in this collection. Interestingly enough, the raw-material for the tools has been sandstone.

The fauna includes the deer, mountain goat, bear, etc.

ISSIK CAVE

The site, explored by V. Yakuob, is located on the Pamirian plateau of southern Tadjikistan. In a few sondages, that the explorer laid here, there are three or four clearly marked layers of the Mesolithic-Neolithic complex. It is extremely significant to note that for the first time in South Tadjikistan, a Chatelperronian back-blunted point has been found, from the lowest level. Somewhat similar example, was, of course, found at Tut-Kaul in layer 2a.

SOVIET EXPLORATIONS IN NORTHERN AFGHANISTAN

In the years 1975 and 1976 A.V. Vinogradov explored the Afghanistan side of the Oxus basin. The area covered by him starts from Sheberghan near Balkh till Talikan region towards its east. Nearly a dozen Stone Age sites have been located (See Figs. 3.35 and 3.35a on pages 197 and 198 of Vol. II for the location of the area and sites).

Some of the sites are of the Mesolithic complex, comparable with the tools from Tut-Kaul Levels 3 and 2a. The main tool-types include rectangles (of Tut-Kaul 3 type), Chatelperronian points and backed blades, as also lunates. Early type of trapezes have been found at sites with Neolithic bias.

According to Ranov this is a very significant discovery since it might show that the Tut-Kaul Mesolithic Complex may have come from Iran via Afghanistan. In other words, West Asian-Near-Eastern-centric theory is clearly implied in this view.

FRESH EXPLORATIONS IN THE SIWALIKS : HANDAXE-CLEAVER INDUSTRY

Dr. G.C. Mohapatra has very recently explored extensively the Siwalik region. Dr. V.A. Ranov, who was on a visit to India, accompanied him. Although Mohapatra took Dr. Ranov to show some good sites of Chopper-Chopping complex, to his most pleasant surprise he collected a large number of true handaxes (Bifaces), cleavers and scrapers from the following sites, which we are quoting with his kind permission, a very rare gesture indeed.

IN THE HOSHIARPUR SIWALIKS

(a) Aitbarpur (b) Rahmanpur (c) Tikhni

At all these sites cleavers have been numerically very dominant

IN ROPAR SIWALIKS

(a) Jatwar (b) Node Majra

Again, the same feature—cleavers predominate

IN CHANDIGARH SIWALIKS

At Kotla. Again the same observations

Undoubtedly, these are epoch-making discoveries since so far it was thought that except for the Soan region, the handaxe-cleaver complex is no where found in the sub-Himalayan zone.

THE PROBLEM OF PETROGLYPHS IN CENTRAL ASIA

To us the Rock Engravings in Central Asia does not fall in the chronological bracket of our present study, since we presume that by and large they are post-500 B.C. when hard iron tools could make these pecking-engravings on such hard rocks as granite. However, bronze tools could still do it, but unfortunately we have no evidence of this kind. In fact, most of these engravings include beautiful horses in action for which there is no archaeological proof in areas like Kirgizia before 1000-500 B.C., although in northern Kazakhstan and in the Volga Delta the horse was well-known in the 2nd millennium B.C. Dr. Y. Zadneprovsky who discovered many of these sites in the Fergana Valley discussed this problem with the author at length. The author himself visited many sites, even in the Caucasus region. Berneshtam who studied many of them at the highly rich sites like Saimaly-Tash (there are over 100,000 engravings here), however, favours Late Bronze- Age/Early Iron Age date for them. There is no way to cheque it (Plates XV-XVI).

LIST OF ABBREVIATIONS

AP	*Ancient Pakistan*
AN SSR	*Archaeologia, Arkheologii, Akademiya Nauk, USSR (Academy of Sciences)*
Arkh. Otkr	*Arkheologicheskiye Otkrytiya (Archaeological Discoveries)*
COWA	*Council for World Archaeology*
EW	*East and West*
IAR	*Indian Archaeology—A Review*
IMK	*Istoriya Materialnoy Kultury Uzbekistan*
Izv. ANT	*Izviestiya Arkheologii Nauk-Turkmen SSR, Ashkhabad*
ITN	*Istoriya Tadjikskogo Naroda (History of the Tadjik People)*
JAOS	*Journal of the African and Oriental Studies*
JFA	*Journal of Field Archaeology*
JNES	*Journal of the Near Eastern Studies*
KS	*Kratkiye Soobshckeniya Instituta Arkheologii (Brief News of the Institute of Archaeology)*
MIA	*Materialy i Issledovamiya po Arkheologii SSR (Materials of and Research into the Archaeology of the USSR) Best Monograph Series*
M & E	*Man and Environment*
PA	*Pakistan Archaeology*
SA	*Sovietskaya Arkheologii* (The most leading quaterly journal of Soviet archaeology)
SE	*Sovietskaya Etnografii*
IV SAA	*Fourth International Conference of South Asian Archaeology*, Naples (1977)
Tr.	*Trudy* (Reports of different Republics and Institutes)
Tr. AE	*Trudy Arkheologii Etnografii*
Tr. IIAE	*Trudy Institute Istorii Arkheologii i Etnografii*
Tr. Kh. E	*Trudy Khorezmskoy Arkheologo-Etnografichskoy Ekspeditzii*
Tr. M. Kh. E.	*Trudy Materialy Khorezmskoy Ekspeditzii*
Tr. YUTAKE or T Yu TAKE	*Trudy Yuzhno-Turkmenskaya Arkheologicheskaya Kompleksnaya Ekzpeditizia* (Southern Turkmenistan Joint Archaeological Expedition)

LIST OF JOURNALS OTHER THAN THOSE MENTIONED IN THE LIST OF ABBREVIATIONS

American Antiquity
Afghanistan
Ancient India
Antiquity
Archaeology
Artic Anthropology
Bulletin of the Metropolitan Museum, New York
Expedition
Iran
Journal of the American Oriental Society
Journal of Central Asia
Puratattva
Radiocarbon
Science
South-Western Journal of Anthropology

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Index

A

Acheulean, 52, 54, 56, 121
Afrasiab, 2
Agispe, 147
Agrawal, 118
Airtam, 2
Ak-Djar, 28, 42-43, 62, 69, 76
Akhal Tekke, 14
Akishev, 49
Ak Kupruk, 136, 142
Ak-Sukon, 69
Aksu-Murgab, 17
Alai Range, 11, 15, 18
Alamedinka R, 50
Alexander's fort, 2
Allchin, 149
Alma Ata, 12, 18, 24, 49
Alpine Mindel, 133
Alpysbaiev, 4, 49
Altin Depe, 5
Aman kutan, 2, 24-25, 43, 50, 63, 85, 128, 139-40
Amir Temir, 50, 63
Amu, Darya, 10, 13-18, 28, 96, 105, 147
Anau, 2
Andronovo Culture, 5
Angren, 18
Aral Sea, 10, 13-17, 90,
Arzani, 53
Asbestos, 16
Atrek, 16-17
Azhikh, 53

B

Baba Darwesh, 135
Baba Tag, 105
Badakshan, 154
Bhatt, 113, 115
Bajanov and Kostenko, 25
Bajaur, 146
Balkh, Balkhan, 12, 16-17, 92, 94
Balkash, 12, 14-15, 18
Bami, 5
Banganga, 107-108, 121, 123, 127, 133, 149, 154
Baysun, 29
Beas, 107-109, 111-112, 121, 123, 133, 149
Begovat, 2
Belenitsky, 1, 5
Berdyiev, 5-6
Bernshtam, 2-3
Besh Bulak, 147
Betpak Dala, 13-14
Bibikova, 25
Bilaspur, 121, 125
Bongard-Levin, 6
Borikazgan, 50, 53-54, 118, 121, 123
Bordes, 132
Bukhara, 14, 18
Burack, 29
Burzahom, 116

C

Caspian, Sea, 10, 12-15, 17, 24, 28, 37, 50, 52-53, 66, 75, 89, 91-92, 94-95, 98

Chagalli Depe, 6
Chakdara, 146
Chakmakli Depe, 6
Chashma-Nigar, 28, 31, 33, 38, 44
Chatkal, 18
Chatyrkyal, 12, 18
Chenab, 112
Chernikov, 49
Chil-Chor Cheshma, 96-97
Chimkent, 12
Chirchik, 18, 50
Chu, Valley, 11-12, 18, 50
Chust, 4

D

Dai, 149
Dalverzin, 4
Dam-Dam Chesma, 6, 50 92, 94, 95,
Dani, 127, 143, 145-146
Darra-i-kur, 154
De Terra and Paterson, 113, 115, 119, 123, 126, 129-131, 139
Dhankent, 1
Dhok Pathan, 129, 133
Dir, 146
Djambul, 12
Djar-Kutan, 51, 62, 63, 69, 128
Djebel, 3, 50, 92, 95
Djeitun, 5-6, 147
Djraber, 53
Djungar-Alatau, 10, 12
Dodonov. 27-28, 34

E

Elken Depe, 6

F

Faizabad Kala, 16
Fakhrabad Pass, 44
Farooqi and Desai, 113
Fedchenko, 11
Fergana, 11, 15, 18, 24, 50, 54, 62, 66, 71, 89, 91, 95, 97, 128
Formozov, 6
Frumkin, 5
Frunze, 12

G

Gachak, 76
Ganga, 148, 157
Gaydukevich, 2
Gebel, 1
Geoksyur, 3, 6
Gerasimov, 50
Ghaggar, 110
Gissar, 18, 28, 59, 96-97, 105
Gordon, 144-146
Gorgan, 16-17
Gufidabad, 69
Guler, 107-108, 111, 129
Gunt, 17
Gupta, 5, 103, 148

H

Harangon, 76
Harappa, Harappan Culture, 2, 6, 148
Haripur, 107-108, 111
Hazar-Sum, 127, 136-137, 139-141, 146-147, 154
Himalaya, Himalayan, 9, 11, 23, 24, 52 105-107, 109, 111, 113, 115, 123, 127, 137, 140, 149-150, 157
Hindukush, 28, 135, 137, 149, 154
Hissar-Alai, 10-11, 28-29, 89, 96
Holocene, 36, 38, 90, 102, 116, 146

I

Idjont, 71
Iliak, 34, 35, 43
Illjak, 25
Inylcheck, 11
Irtysh, 49

Isfairam Sai, 56, 125
Islamov, 95,98
Issyk-kul, 12, 18, 50
Itina, 4

J

Jalilpur, 148
Jamalgarhi,142, 144-146, 149
Janbas Kala, 147
Jangadja, 50
Jeshin-Tash, 25, 43
Joshi, 107, 113, 133

K

Kachuris, 6
Kafirnigan, 18, 29, 66
Kairagach 50-51, 56, 125
Kairak Kum, 54, 62, 66, 128
Kala-i-Mug, 2
Kangra Valley, 40, 105, 107, 147
Kapchigai, 50, 62, 71, 76
Karabil, 14
Kara-Bura, 4, 24, 42-43, 51, 62, 66, 129
133, 135, 137, 140, 146-147, 154
Kara Darya, 15, 18
Kara Depe, 3
Kara Kamer, 76
Kara-Kum, 9-17, 50
Kara Maidan, 28, 31, 33
Kara-Oi, 147
Karatau, 4, 16, 18, 27-28, 38, 40, 49, 51-54, 71, 119, 123 133, 135
Karasu, 129
Karewa, 113-114, 116, 118
Karganda, 50
Kashmir, Valley, 66, 106, 112-113, 118, 147
Kasymov, 4, 62, 66
Katigarhi, 146
Kayrubak, 23, 30-35, 40, 44
Kazakhstan, 49-50, 52-54, 56, 90, 105, 118, 121, 125, 129, 147
Keltminar, 4
Khapuz Depe, 6
Khlopin, 3, 6
Khludov, 4
Khodja-Bakirgan, 4, 50, 54
Khodja-Gor, 4, 69, 75, 85
Khodja-Kent, 6, 50, 62, 64, 128
Khoja Mumin, 11
Khoja-Yagona, 69
Khonako, 28, 33, 38, 40, 44
Khorangon, 69
Khorezm, 2, 17
Khutor Storozhveskii, 147
Kile Gul Mohammad, 147
Kirgizia, 50, 61, 75, 125, 127
Kirki, 18
Kizil Arvat, 17
Kizil Kala, 51, 54, 76
Kizil Kum, 6, 147
Klapchuk, 50
Knorozov, 6
Koiki-tau, 51, 54
Koldihwa, 148
Kopet Dag, 12, 14-18, 56, 66, 95
Kostenko and Ranov, 24, 26, 43
Kourdukov, 25
Kozhemiako, 5
Krasnov, 28
Krasnovodsk, 12, 17, 50, 52, 66, 75, 91-92, 128
Krishnaswami, 4, 121, 125, 127
Kst-Kanskara, 80
Kuchai, 148
Kudaro, 53
Kuftin, 3
Kuhi-Pies, 6, 51, 54, 62
Kul-Bulak, 62, 76
Kuliab, 29-30
Kurteke, 102
Kuruksay, 28, 30-32, 34-35
Kyzyl Djhar, 50
Kyzyl Kum, 11, 13-16
Kyzyl Orda, 16
Kyzylsu, 18, 31-33, 50

L

Lakhuti, 4, 27-28, 32-33, 38-39, 51, 123, 133, 135
Lal, 121, 123, 127
Lamberg-Karlovsky, 5
Lazarenko, 4, 27
Lekhahia, 148
Lerkh, 1
Lev, D.N. 3, 6, 50, 80, 83, 139
Lidder Valley, 116
Litvinsky, 3, 6, 50
Loskutor, 30
Luzgin, 55, 66

M

Machai, 96-98
Magian, 76
Mandelshtam, 6
Mangistau, 12
Mangyshlak, 2, 12, 90
Margidav, 69
Markov, 6, 50
Masson, 2-4, and Sarianidi, 5, 81, 95
Merv, 2
Mingora, 146
Mohapatra, 106, 111, 118, 121, 123, 127, 133
Mohenjo-daro, 2
Mongait, 5
Mousterian, 25, 27, 34, 40-41, 43-44, 49-50, 53-54, 60-65, 69, 71-76, 84-85, 89, 98, 128-129, 133, 135-137, 139-140, 143, 146, 149, 154, 157
Movius, 2, 25, 49, 129, 139
Munchak Tepe, 2
Murgab, 2, 15, 17-18
Muyun Kum, 13-14, 18, 50

N

Namazga Depe, 3, 5
Naryn, 15, 49
Nasretdinov, 6, 50, 62
Navdatoli, 148
Neanderthal, 2, 24
Nebit Dag, 12
Nesmeyanov, 25
Nevasa, 148
Nikiforova, 28
Nikonov, 35

O

Oakley, 26
Oaj Khad, 107
Obigram, 29
Obi Kiik, 97
Obimazar, 18, 31
Obi Rahmat, 6, 50, 62, 64, 65, 128
Obrahmat, 44
Ogzi-Kichik, 24, 44, 51, 62, 83-85
Okhna, 50, 71
Okladnikov, 2-4, 49-50, 52, 59, 62, 66, 80, 90, 105
Olchibagh, 113-115
On-Archa, 4, 50-51, 125
Osh-Khona, 97, 99
Oxus, 12, 14-15, 149

P

Pakhomov, 99
Palaeolithic, Lower, 27, 38, 40, 43, 49, 50-52, 54, 56, 59, 75, 129, 150, Middle, 24, 27, 40-44, 51-52, 59, 61-62, 66, 69, 71, 75-76, 78, 127, 129-130, 133; 137, 140, 146, 154, Upper, 27, 44-45, 50-51, 65, 71, 75-76, 81-82, 83, 89-91, 100-102, 123, 136, 137, 146, 154, 157
Pamir, 9-11, 13, 16, 23, 28-29, 35, 52, 59, 89, 91, 96, 100, 102, 105, 123, 135
Panchoh, 148
Parfenov, 98
Parkho-darra, 142
Paropamisus, 17
Paterson, 132 and Drummond, 120,123, 126-127, 129, 131, 133, 146

Penkov, 28
Petroglyphs, 4
Pindigheb, 129, 133
Pleistocene, 50, 146, 147, 149, 150, 154, Lower, 43; Middle, 33, 35, 38, 40-41, 123; Upper, 33-35, 38, 41, 43-44, 52, 81, 82, 84, 110, 115, 118-119, 123, 137, 142, 150
Prufer, 121
Puglisi, 127, 137
Pumpelly, 2
Pyandj, 16

R

Ranov, 3-6, 24, 26, 28, 38, 40-41, 43-45, 50-52, 54, 62-63, 66, 68-69, 76, 80-81, 83, 85, 100, 102, 118-119, 121, 123, 125, 135
Rohri-Sukkhar, 148
Ror, 108
Rudenko, 80, 90

S

Sahani and Mathur, 107
Saimalytash, 4
Saksaul, 147
Salim, 129, 131
Samarkand, 1-2, 6, 18, 44, 50, 63, 75-76, 80-81, 85, 136, 139
Sangankallu, 148
Sanghao, 127, 136, 142-145, 149, 154, 157
Sankalia, 112-113, 116, 133
Sarez, 17
Sarai-Khola, 148
Sarai Nahar Rai, 148
Sarianidi, 3, 6
Sari-Arka, 52-53, 56, 125
Sari Ishikotrau, 13
Sari-Kurgan, 62
Sarsu-Pass, 18
Sarykamysh, 16-17
Sary-Su, 50
Satani Dar, 53
Saur mt, 10
Schmidt, 2
Seki Paparian, 113-116
Semiganj, 43, 51, 62-63, 128
Semirechye, 2
Sen, D., 109, 121, 123, 127
Shakhta Caves, 3, 100, 102
Shchetenko, 3, 5-6
Shirabad, R., 18
Shor-kul, 54, 69
Shougnou, 24, 44, 51, 75, 81, 85
Siberian mt. Goat, 24, 60, 64
Sidorov, 102
Sirsa Valley, 109-110, 112, 121, 123
Siwalik, 105, 107-108, 110-111
Soan, 52, 66, 69, 80, 108, 110-111, 112, 118-121, 146-147, 149, 154, Culture, 23, 40, 121, 125-127, 129-131, 133, 135-137, 140, People, 134-135, Valley, 121-123, 126, 131, 139
Sonkul, 18
Sorokin, 5
Soundararajan, 129
Sprishevsky, 4
Suleimanov, 6, 50, 62, 65
Sultan uizdag, 17
Sumber, 16-17
Surkhan, 18, 29, 96
Sutlej, 110, 121, 123, 125, 127
Swat, 146, 148
Syr-Darya, 1-2, 10, 14-16, 18, 24, 52, 63, 66, 71, 105

T

Tadjik Depresson, 25, 27, 28-29
Takhia Tash, 27
Takht-bahi, 146
Talass, 12
Tanir-kazgan, 50, 121
Tar bagatai, 10
Tastibutak, 5

Tedjen, 15, 17-18
Termez, 2, 18
Teshik-Tash, 2, 24, 49-50, 59-64, 66, 98, 105, 128, 135
Thana, 146
Timber Grave, 6
Todd, 148
Tokali, 53-54, 125
Tolstov, 2-4, 98
Tom-Chi-Su, 54, 128
Tosi, 5
Tossor, 62, 128
Turan, 14, 28
Turgai uplands, 13
Turtkul, 17
Tut kaul 51, 69

U

Uchtut, 71
Uch Kurganan Palnan, 50
Ulug-Depe, 6
Ust-Kiakhta, 147
Ustyurt Uplands, 13, 90
Uzboi, 4, 12, 14, 16, 90-92, 95
Uzum-Aral Strait, 14

V

Vakhditjiv, 16
Vaksh, 16, 18, 29, 31, 34-35, 38, 43, 68, 75, 96
Vassi kovsky, 24
Vinogradov, 4, 6, 149
Volchok, 6
Volschtedt, 26

Y

Yakubovsky, 2
Yale-Cambridge Expedition, 2, 105, 130
Yangadja, 175
Yavanshu, 18

Z

Zaalarsky, 11
Zadneprovsky, 4
Zailusky Alatau, 12
Zaporozha kaya, 59
Zaraut-Kamar, 6
Zaraut Sai, 6, 100
Zaunguzk Plateau, 14
Zeravshan, 11, 15, 18, 62, 105
Zonskaya, 53

List of Plates

I General View of the Buried Palaeosol of Lakhuti I site, southern Tadjikistan (Lower Palaeolithic)

II General View of the Excavated Areas of different Pedocomplexes at Karatau I site, southern Tadjikistan (Lower Palaeolithic)

III General View of the huge Karatau I Palaeosol deposits, southern Tadjikistan (Lower Palaeolithic)

IV Excavated trenches at Shougnou, southern Tadjikistan (Upper Palaeolithic)

V Excavations in progress at Ogzi-Kitchik rock-shelter, southern Tadjikistan (Middle Palaeolithic)

VI General View of the Tut-Kaul site, southern Tadjikistan (Mesolithic-Neolithic)

VII Cleaning of the cultural levels at Tut-Kaul, southern Tadjikistan (Mesolithic—Neolithic)

VIII Stone pavement (floor) at Tut-Kaul, southern Tadjikistan (Mesolithic-Neolithic)

IX General View of the Osh-Khana site; Western Pamirs, southern Tadjikistan (Mesolithic)

X Painted Rock-Shelter at Zaraut Sai, southern Uzbekistan (Mesolithic)

XI The picturesque hilly environment of the Tut-Kaul region, southern Tadjikistan

XII The excavated trenches at the Ogzi-Kitchik Cave site, southern Tadjikistan (Middle Palaeolithic)

XIII General View of the Kara Bura site (point no. 6) southern Tadjikistan (Middle Palaeolithic)

XIV Excavated trenches at Kara Bura, southern Tadjikistan (Middle Palaeolithic)

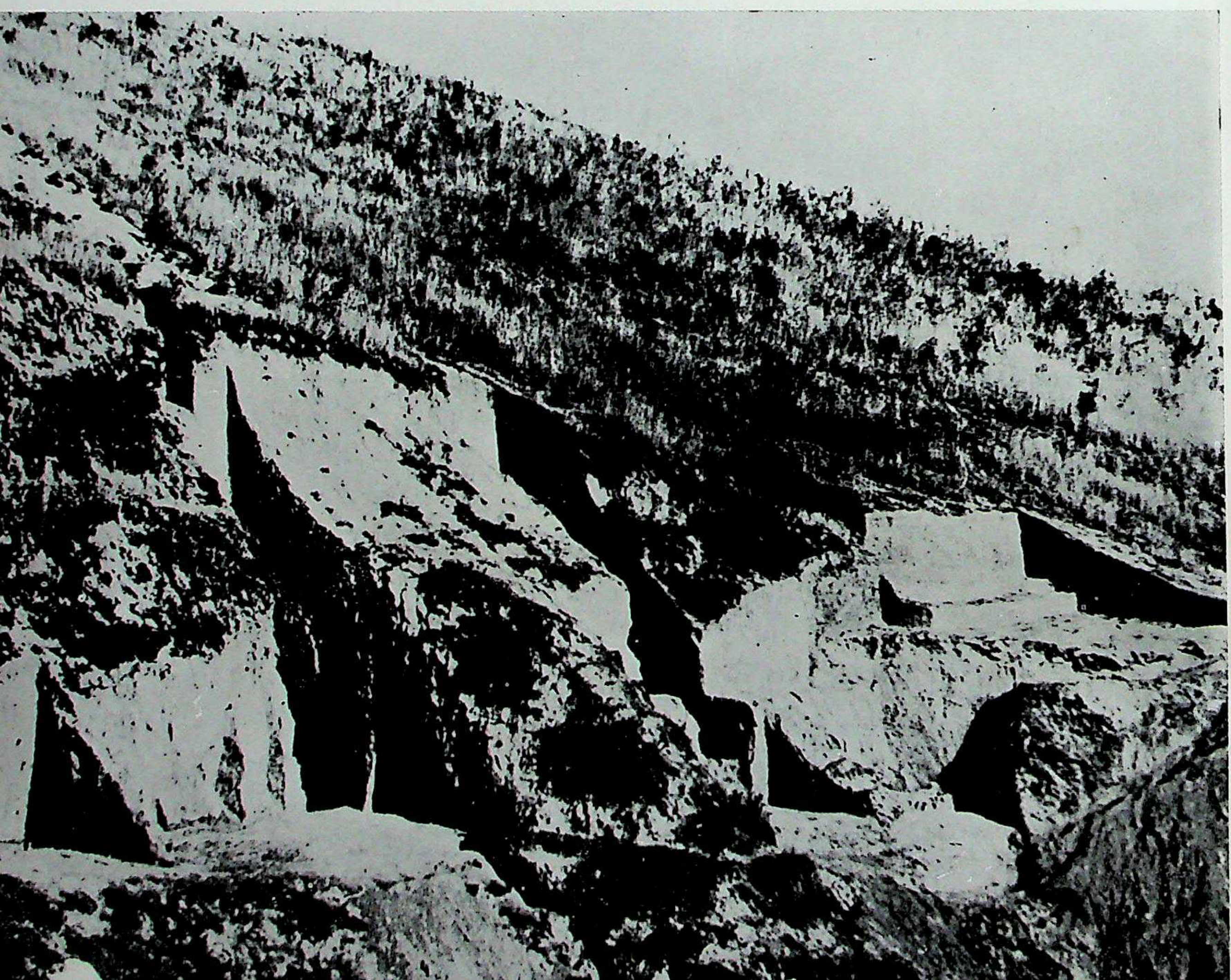
XV Huge surface of a rock at Aravan, Kirgizia, with engravings of horses, wild goats, men and magic symbols (Late Bronze Age—Early Iron Age ?)

XVI 'The Falling Horses' engraved on an exposed rock-surface at Saimaly-Tash, Kirgizia (Late Bronze Age—Early Iron Age ?)

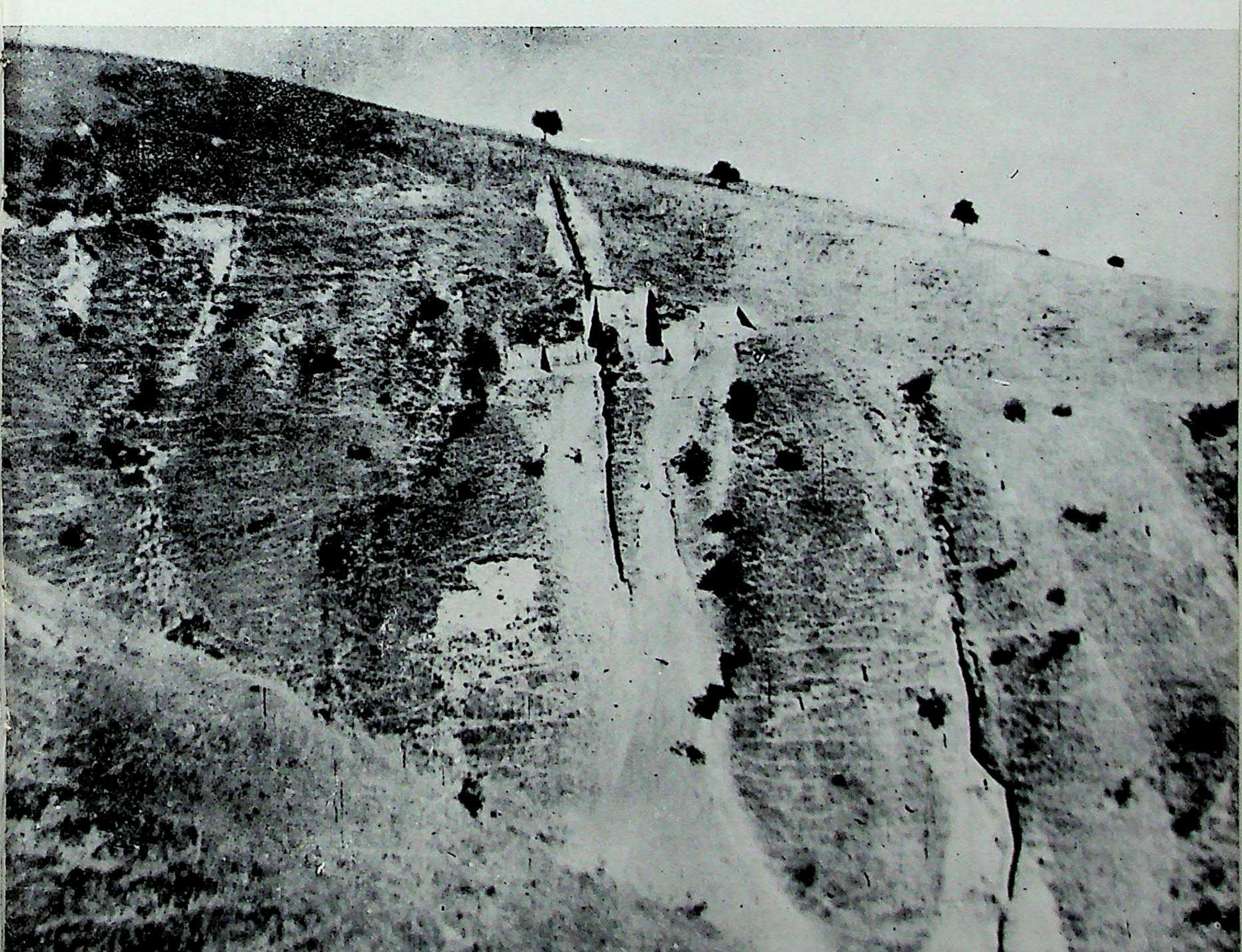
XVII Paintings at Shakhta Cave, south Tadjikistan (Mesolithic)

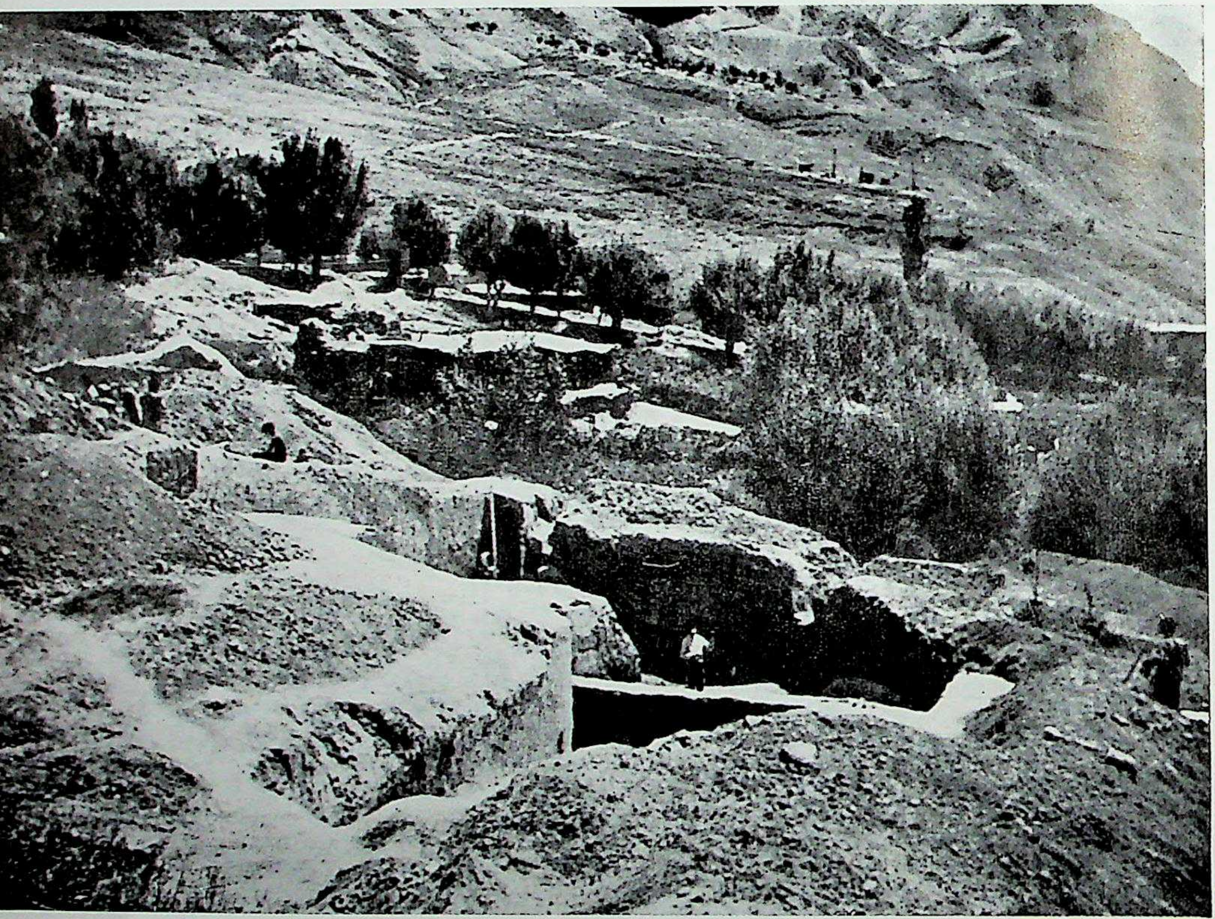
I

II



III





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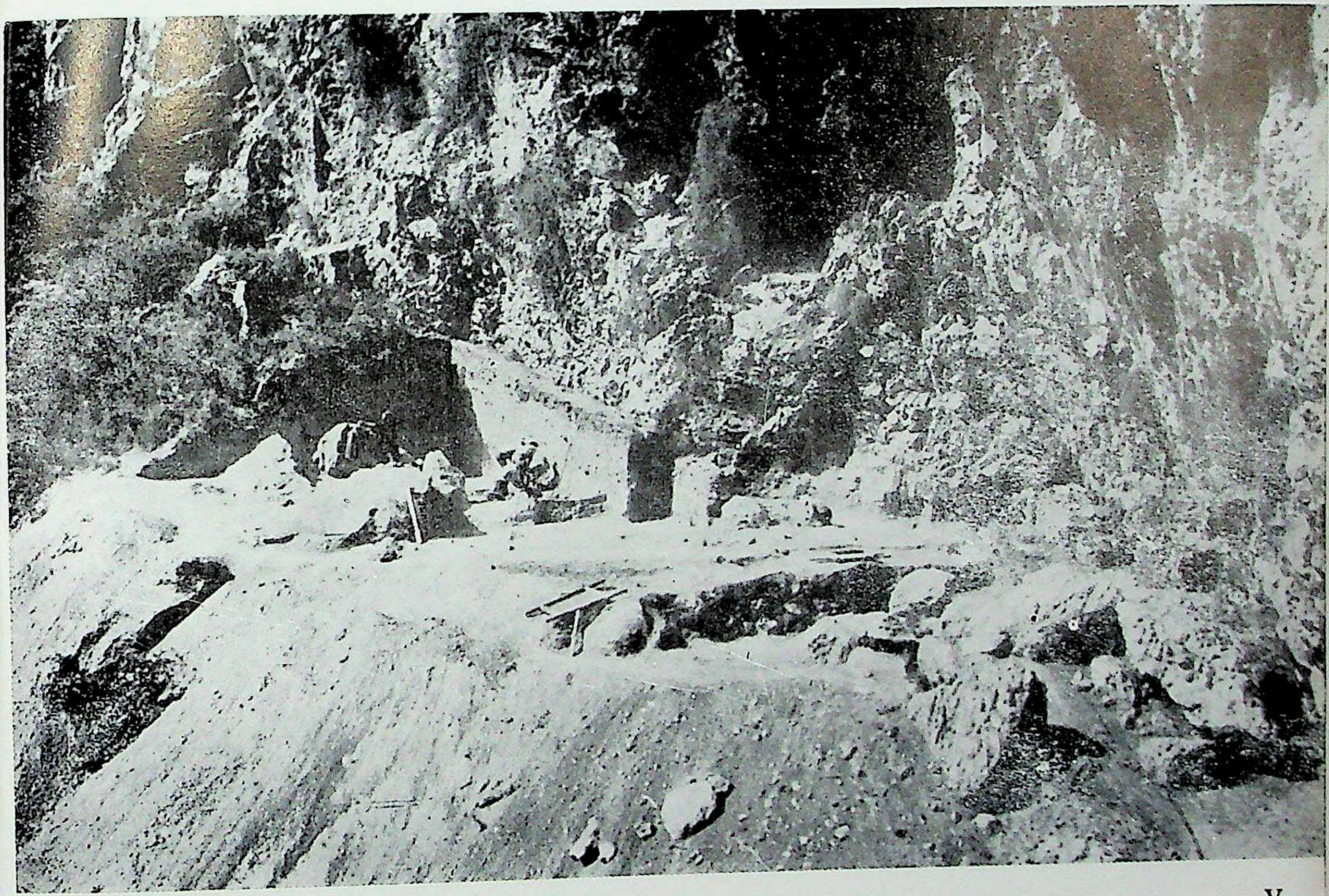

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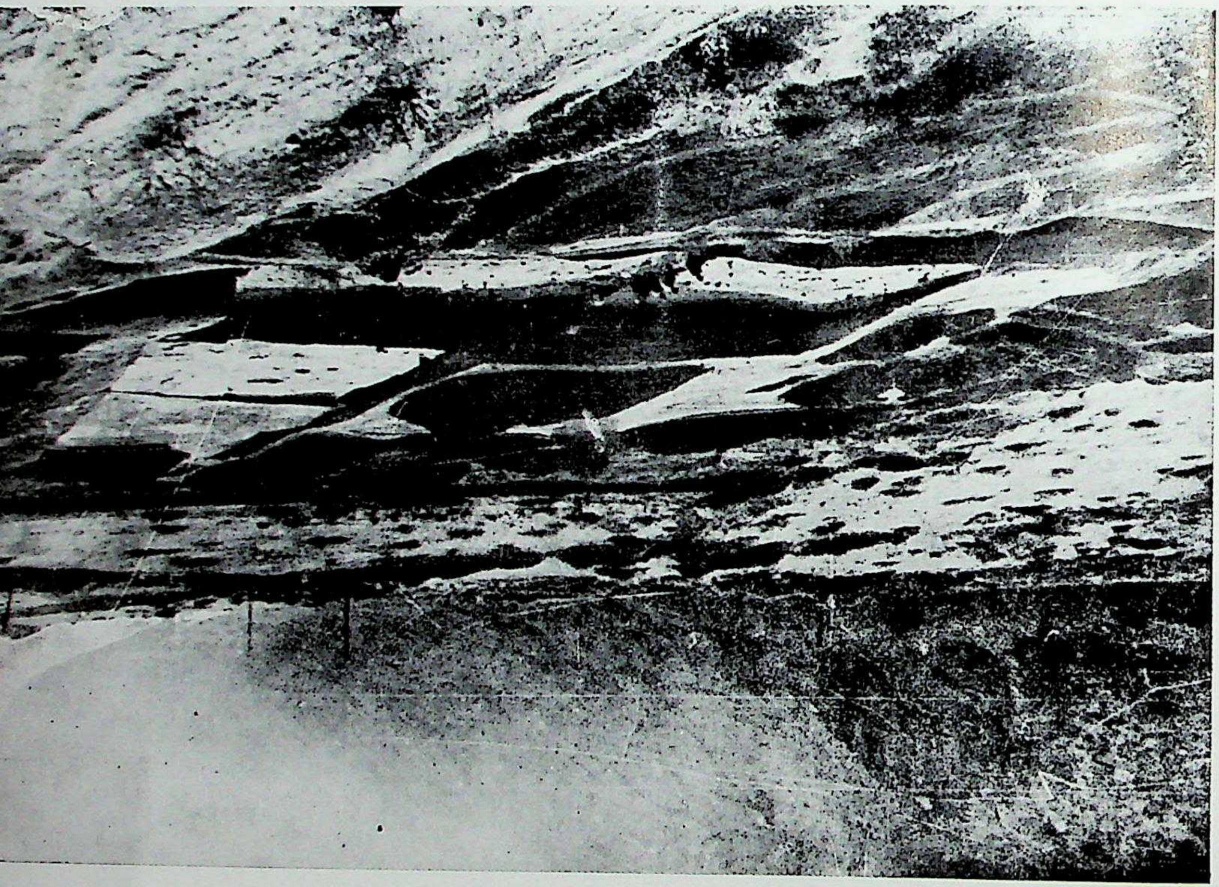
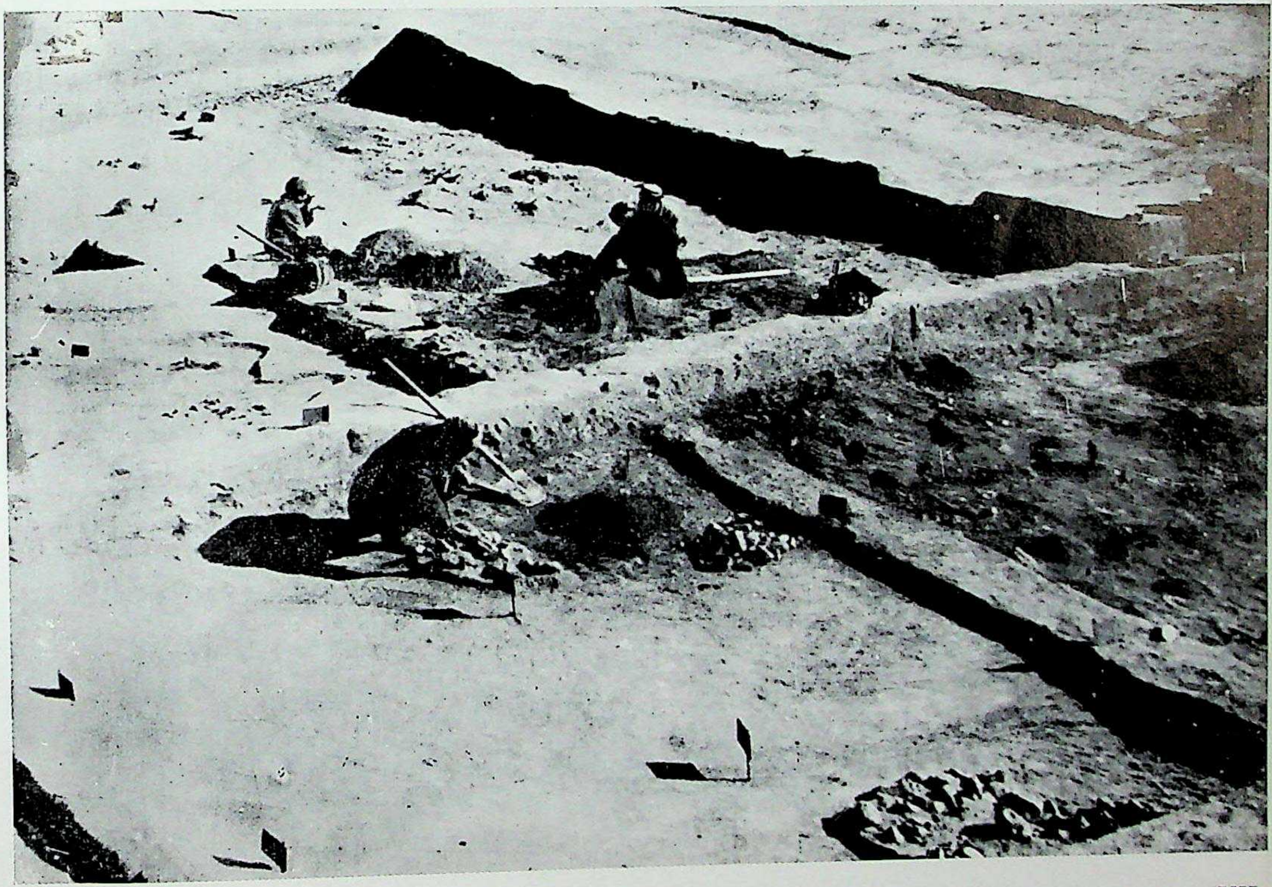


VI



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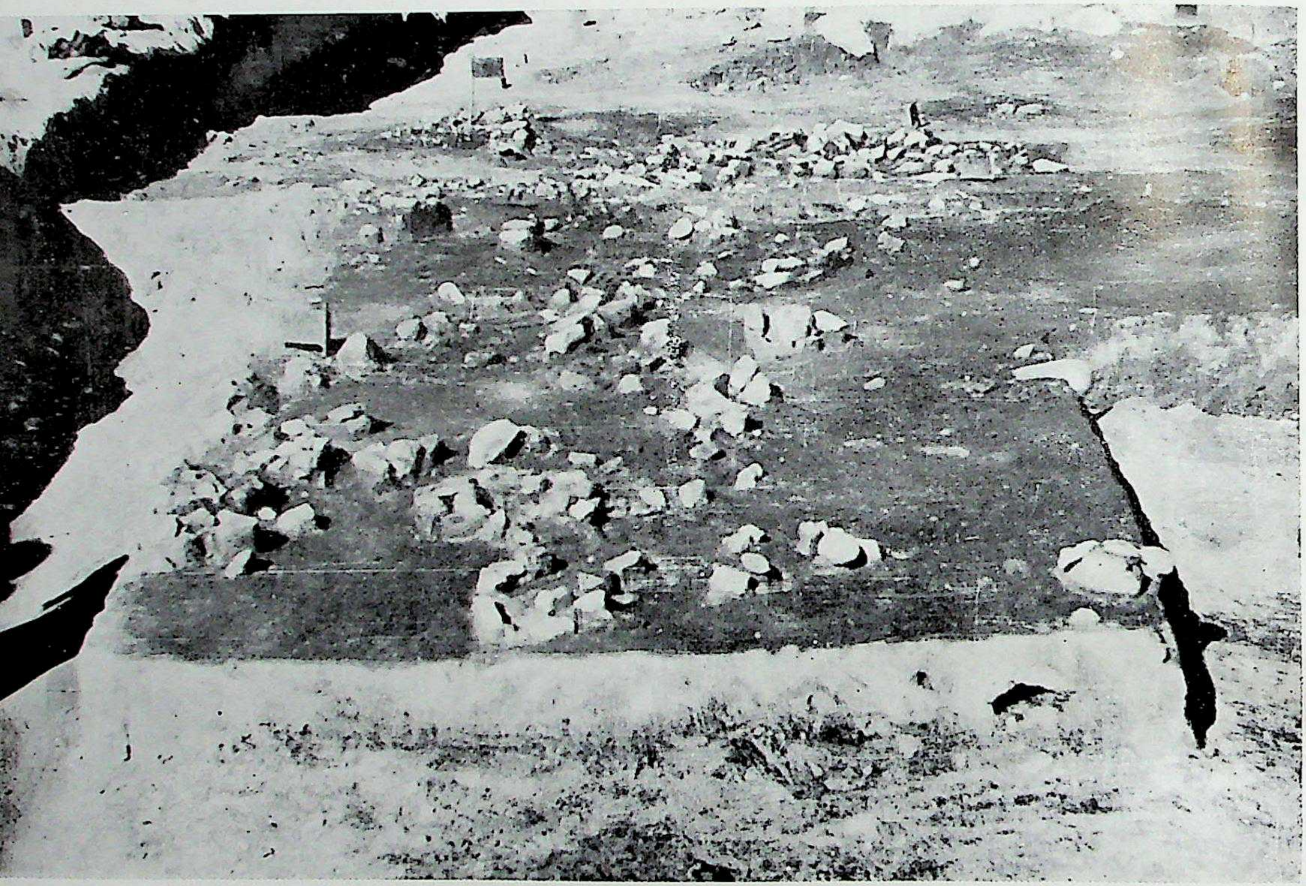

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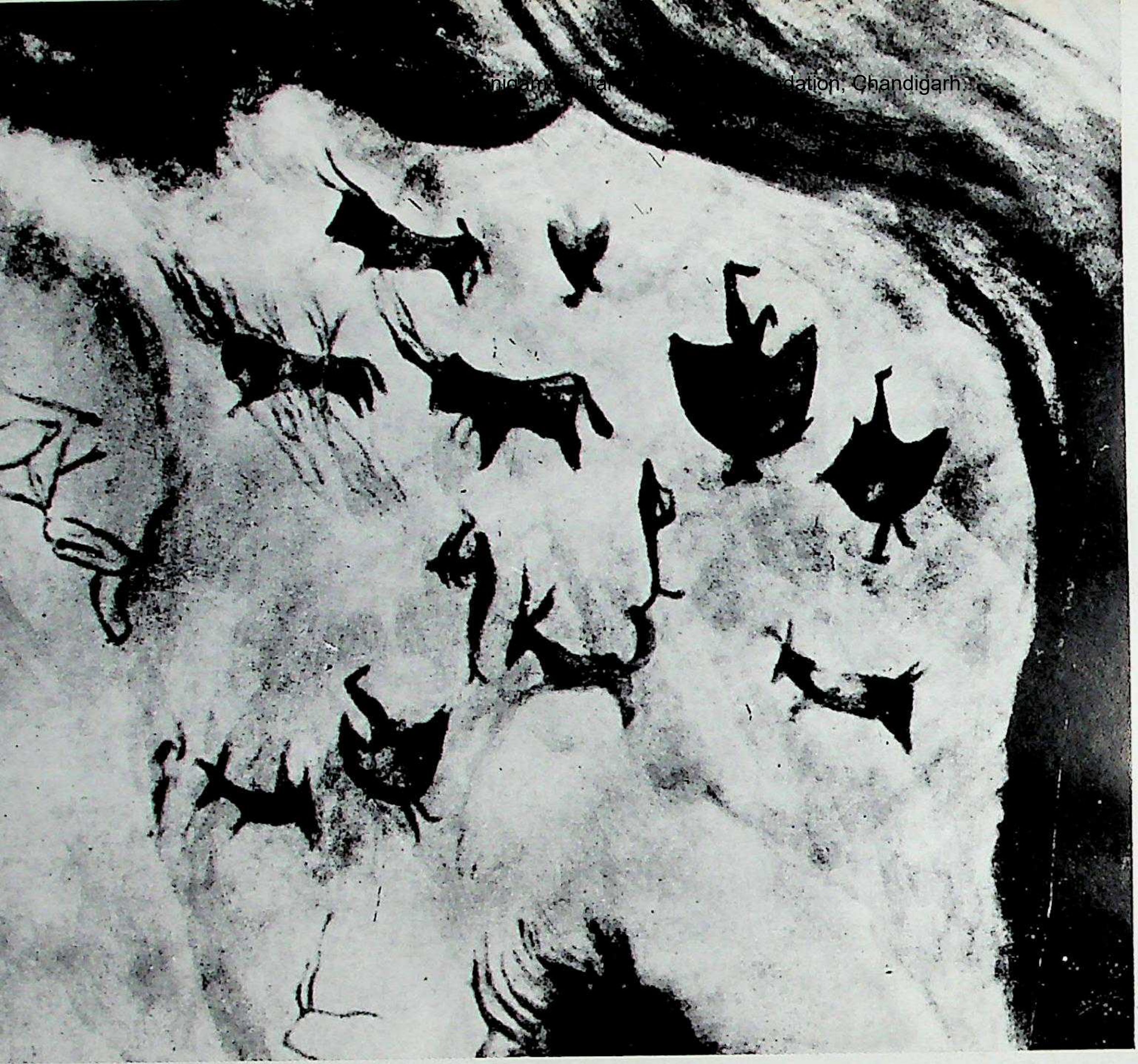
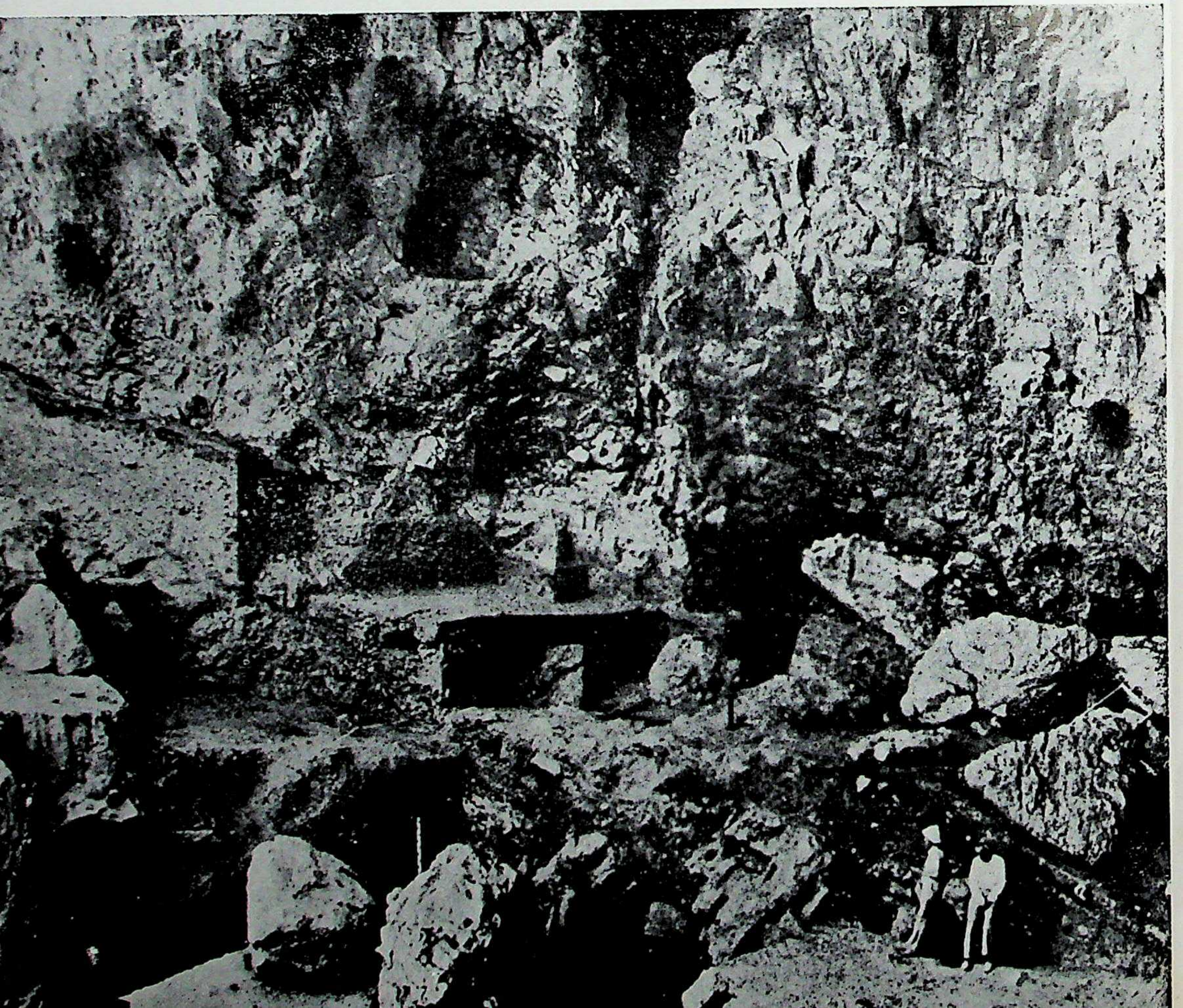
IX

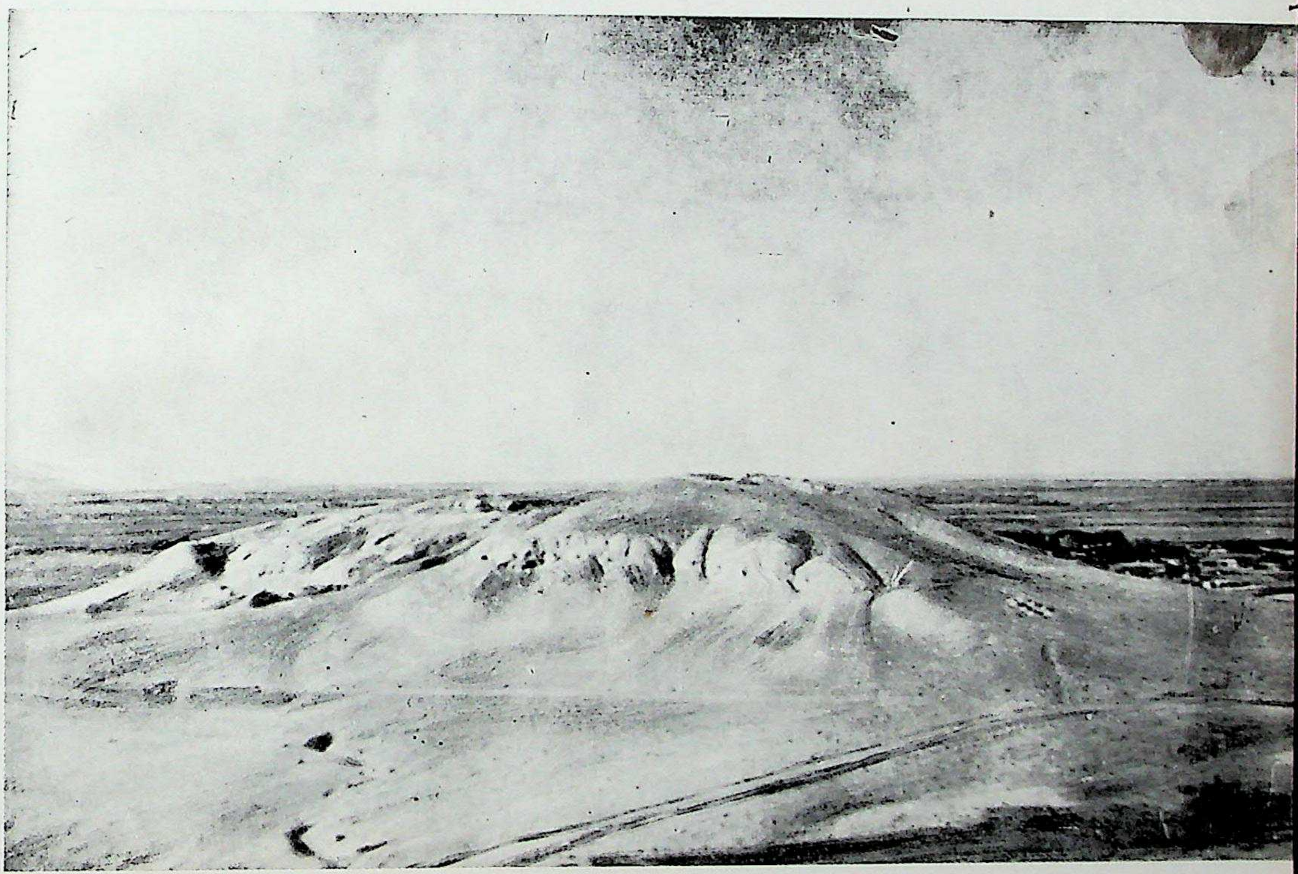


X

XI

XII





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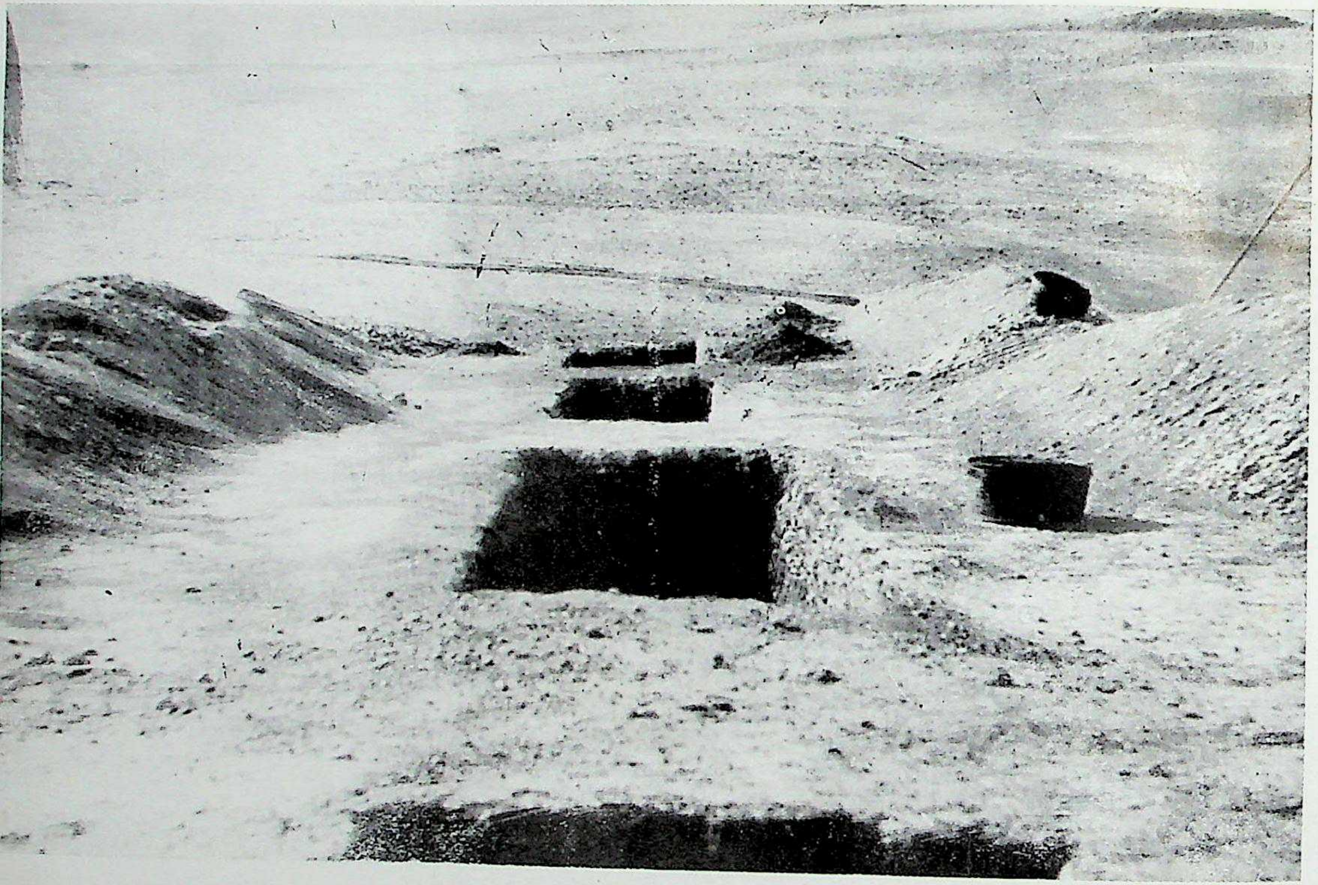
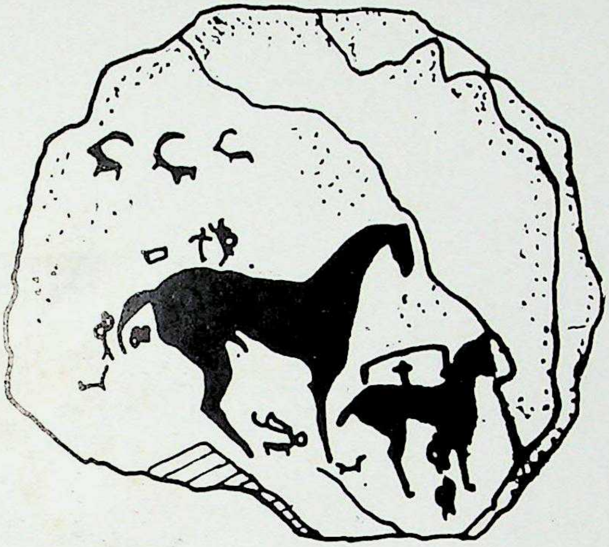
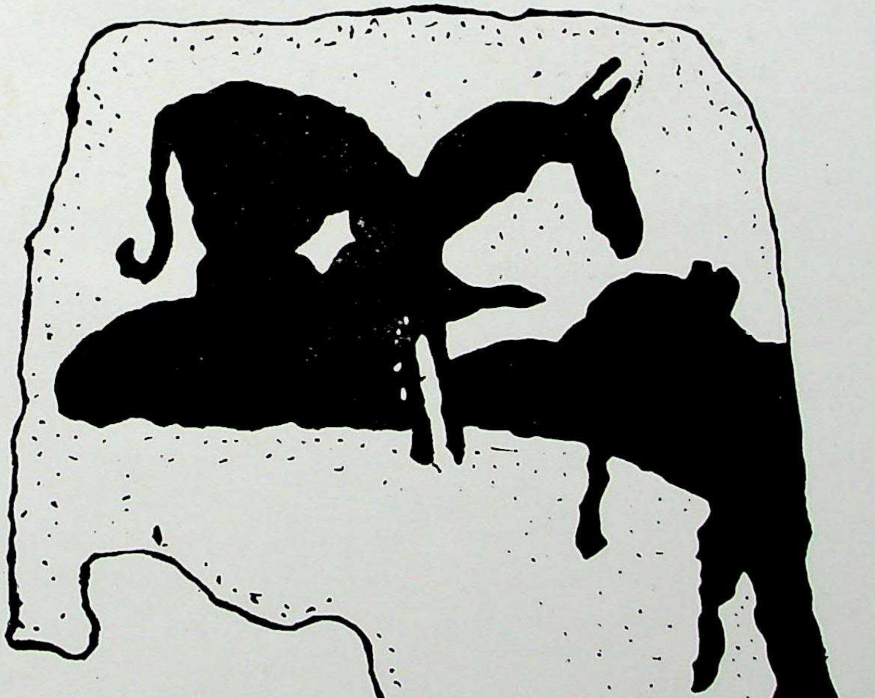


XIV



XV



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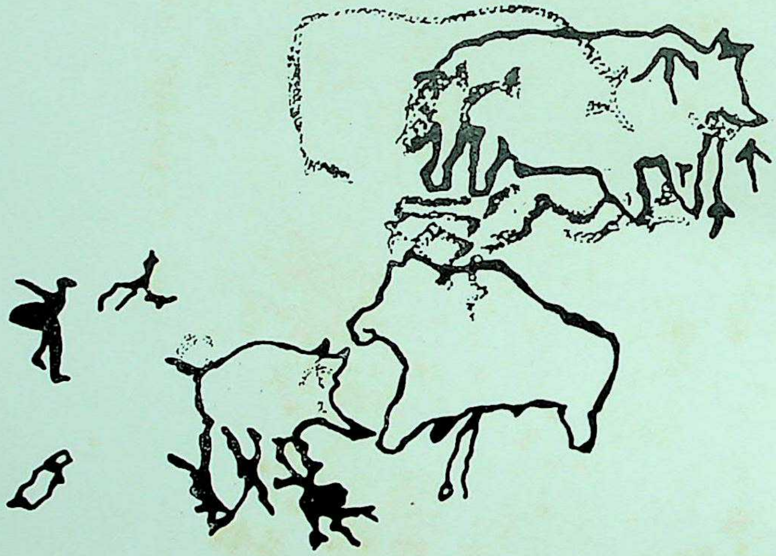
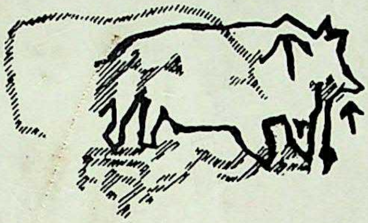


XVII

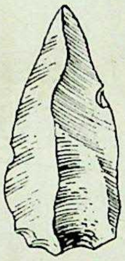
About this Book (Vol. I & II)

"Well compiled and written book by S. P. Gupta is the most extensive and detailed work in English. It is the result of the visit Dr. S. P. Gupta paid to the USSR and his laborious research of the Russian scientific literature. This work could not have been possible without long contacts between Indian scholars and Soviet archaeologists. This is a wonderful example of fruitful international cooperation..."

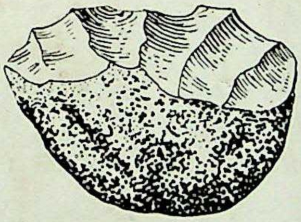
—V. A. RANOV
Head of Archaeology Deptt.,
Academy of Sciences, Tadjik USSR



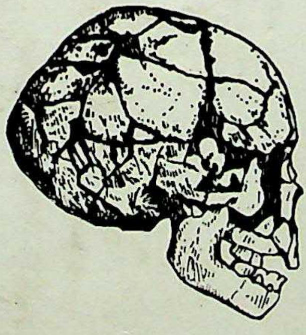
THE book deals with a region which is legendary in history since it has been a melting pot of various Asian cultures not only in the recent past but also in the prehistoric times. Unfortunately, much of the archaeological discoveries made during the last fifty years, which have thrown new light on that history, is not sufficiently known outside the USSR, mainly because of the language barrier.



THE BOOK HAS BEEN PLANNED IN THREE VOLUMES : THE FIRST DEALS WITH THE PREHISTORIC CULTURES OF THE STONE AGE, THE SECOND DEALS WITH PROTOHISTORIC CULTURES OF THE BRONZE AGE AND THE EARLY IRON AGE, WHILE THE THIRD DEALS WITH THE CULTURES OF HISTORICAL PERIOD.



THE book, however, does not concern itself exclusively with the cultures of Central Asia, it takes into account the Indian Boderlands also-north-western India, Pakistan, Afghanistan Iran and western China—of course, to the extent they entered into culture-interaction with Soviet Central Asia. It is, therefore, a unique work. Nearly 350 figures, maps, charts and plates Illustrate Vol. I and Vol. II



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